

## Chapter 5. Corporate Management

In the current survey of ceramic manufacturers, we classified the manufacturers by region, size, foreign capital, and other factors and tried to obtain a grasp of the features of their management.

In the selection of the survey regions, we focused on the three regions of Chiang Mai, Lampang, and Bangkok (including areas surrounding Bangkok), which for major sectors of the Thai ceramic industry. Further, we classified manufacturers into small and medium sized manufacturers, large sized tableware manufacturers, and joint venture manufacturers with foreign companies.

In Chiang Mai and Lampang, we were not able to find any joint venture manufacturers with foreign capital and large sized tableware manufacturers. Joint venture manufacturers with foreign capital and large sized tableware manufacturers would mean mass production and mass sales as a basic assumption, but in Chiang Mai and Lampang, it is difficult to assemble the management staff, engineers, and other manpower required for establishing and maintaining a mass production and mass sales system. Therefore, such manufacturers, it is believed, tend to concentrate in Bangkok.

The following table shows the number of ceramic manufacturers which we were able to visit for the survey, as classified according to the above.

Classification of Ceramic Manufacturers Visited

Region	Medium/Small size	Large size	Joint venture with foreign capital
Chiang Mai	11	None	None
Lampang	15	None	None
Bangkok and environs	13	3	2
Total	39	3	2

## 5-1. Establishment of Sales Targets

Table IV-5-1 shows the general trends in what kind of products, qualities, and prices the ceramic manufacturers visited set and what markets they targeted with those products. From the table, it will be seen that the sales targets differ in the different regions.

**Table IV-5-1. General Trends in Products**

	Chiang Mai	Lampang	Bangkok and environs		
			Medium /small size	with foreign capital	large size
Products	Mostly traditional celadon novelties	Mostly white porcelain-like novelties	Different for each company		White porcelain-like tableware Bone china
Quality	Medium	Low	Low to medium, some artistic works as well.	Medium to high	Medium to high
Prices	Medium	Low	Medium to low	Medium to high	Medium to high
Markets	Many manufacturers primarily engaged in sales to foreign tourists and exports.	The majority of the manufacturers are mostly serving the domestic market	Polarization between manufacturers mainly engaged in exports and manufacturers mainly serving domestic market	Mostly exporting	Polarization between manufacturers mainly engaged in exports and manufacturers mainly serving domestic market

Below, a discussion will be made of the general features of the general sales targets set, as seen by region, from the perspective of the expansion of exports.

### (1) Small and Medium Sized Manufacturers in Chiang Mai

In Chiang Mai, the foreign tourist market and the export market are the main sales channels for most manufacturers producing traditional celadon novelties. In general, the quality of the products is higher than that of the Lampang ceramic manufacturers and the price is set higher accordingly.

### (2) Small and Medium Sized Manufacturers in Lampang

In Lampang, most of the manufacturers determine which items to produce and set quality and prices targeting primarily the domestic market. The domestic market is founded on inexpensive products, so in most cases the manufacturers produce and ship out low cost, low quality items. Therefore, they are not positive when it comes to investment in manpower, facilities, technology, etc. as these would lead to higher production costs. The tendency is strong to maintain the status quo.

Some of the products of these manufacturers have been exported through trading companies and marketing companies in Bangkok. One marketing company stated that when exporting such products, it stressed not the quality, but the primitive nature. Since the items are supposed to be primitive, the shipment prices from the manufacturers could not conceivably be good. Some of the manufacturers in Lampang state that the profit margins are better in products sold to the domestic market. It is difficult to believe that the export market for primitive items could be that large in size, and exports of this type of product probably will reach a limit of expansion in volume. Therefore, it is considered necessary for these manufacturers to shift their product lines to fields of larger volumes in the export markets so as to increase their exports.

In Lampang, several ceramic manufacturers were seen which operated primarily for the export market, but in general their products were mostly large in size or hand painted types.

### (3) Small and Medium Sized Manufacturers in Bangkok and Environs

The small and medium sized manufacturers in this region may be roughly divided into those which target the domestic market and those which target the export market. In general, factories with over 60 workers tend to produce and ship out products primarily for export.

The manufacturers which target the domestic market have substantially the same product lines, qualities, and prices as the majority of the manufacturers in Lampang .

The products of the small and medium sized manufacturers engaged primarily in exports include numerous relatively large sized items and hand painted items. Further, some artistic products were also observed. In other words, the manufacturers were targeting fields of products difficult to mass produce by machine and requiring input of

considerable skilled labor. However, along with the recent surge in exports, a shortage has begun to appear in workers in hand painting jobs. If things continue as they are, this may become a bottleneck in the expansion of exports.

#### (4) Joint Venture Manufacturers with Foreign Capital in Bangkok and Environs

Recently, joint ventures have been seen established in Bangkok with Taiwanese, Japanese, and other foreign capital. Behind the entry of this foreign capital into Thailand there has been the desire to use the cheap labor force of Thailand so as to maintain price competitiveness. Therefore, production of troublesome items is being shifted to Thailand. These products are sent on to export channels previously developed in the U.S., Europe, Japan, etc.

#### (5) Large-Scale Producers in Bangkok and Environs

At present, Royal Porcelain Co., Ltd. and Asian Porcelain Industry Co., Ltd. are the two largest manufacturers in terms of production volume. Each of them produces 1-2 million pieces a month, of which 70-90% is exported. Products include mid- and high-range goods such as porcelain tableware, bone china, and earthenware.

S.P. Ceramic, previously one of the leading manufacturers, was taken over by a bank last year and restarted operations in June of this year under the name Prathaan Kaankhaa. Although only one factory is engaged in production at present, there are plans to start operation at two others in the near future, thereby making this firm the nation's largest manufacturer. Production at Prathaan Kaankhaa targets the domestic market, and the company does not export. This policy comes as the result of the recent growth in local demand for mid- and high-range products. Signs of a growing awareness of the domestic market could also be seen at the other manufacturers.

## 5-2. Tackling of Export Products

Table IV-5-2 shows how much the small and medium sized ceramic manufacturers visited are tackling the production of export products. Export products here include products directly exported by the manufacturers, products exported through trading companies, and products directly sold to foreign tourists. Further, the degree of effort taken in export products was classified into the following three ranks A, B, and C.

**Table IV-5-2. Production of Export Products**

- A: Manufacturers mainly producing products for export market (50 percent or more for export)
- B: Manufacturers producing both for export and for domestic market (10 to less than 50 percent for export)
- C: Manufacturers mainly producing products for domestic market (less than 10 percent for export)

Company	Chiang Mai		Company	Lampang		Company	Bangkok and environs	
	Workers	Exports		Workers	Exports		Workers	Exports
C01	70	A	L01	20	A	B01	20	C
C02	72	A	L02	100	A	B02	68	A
C03	61	A	L03	45	A	B03	160	A
C04	16	n.a.	L04	70	n.a.	B04	150	A
C05	72	A	L05	110	n.a.	B05	65	A
C06	19	C	L06	80	A	B06	160	A
C07	10	C	L07	40	C	B07	32	C
C08	60	A	L08	80	B	B08	20	C
C09	n.a.	n.a.	L10	300	n.a.	B09	30	C
C10	60	A	L10	300	n.a.	B10	65	A
C11	91	A	L11	120	A	B11	165	A
			L12	200	B	B12	40	C
			L13	120	C	B13	10	C
			L14	30	C	B14	20	C
			L15	110	C	B15	20	C

The way the ceramic manufacturers visited tackled export products was found to differ depending on the scale of production of the manufacturers. With the exception of the large sized tableware manufacturers, the manufacturers were using labor-intensive production systems, so it is considered possible to judge the scale of production by the number of workers. The following may be said about the relationship between the ceramic manufacturers and the way they tackle export products.

- (1) Polarization Between Manufacturers of Mainly Export Products and Manufacturers of Mainly Domestic Market Products

The ceramic manufacturers visited could be said to have been divided into two groups irrespective of region, i.e., Chiang Mai, Lampang, or Bangkok, that is, manufacturers which primarily engaged in production and shipment of export products and manufacturers which engaged primarily in products for the domestic market.

This is due to the difference in the level of quality of export products and products for the domestic market and to the difficulty in running products of different levels of quality through the same production line. If manufacturers were to establish production lines which could produce products of a level of quality sufficient for export products, their production costs would rise compared with the case of production of products solely for the domestic market. Further, if they tried to produce and ship products for the domestic market using such lines, they would find it unprofitable or would find their profit margins drastically cut. Further, if workers are asked to engage in complicated quality control, it is easy for the control to be lost and for the overall quality to fall to a low level. It is for this reason that it is believed a polarization has occurred between manufacturers producing mainly export products and manufacturers producing mainly products for the domestic market.

## (2) Production of Export Products by Manufacturers with Over 60 Employees

Almost all manufacturers producing primarily export products had more than 60 workers, it was observed. Manufacturers with few than those workers basically produced for the domestic market.

A production system consisting of over 60 workers may be said to be the smallest unit of factory size enabling the demands of the export market on shipment volumes and delivery schedules to be met. Further, a size of over 60 workers is one enabling the usual production system in Thailand, wherein all processes from the preparation of the clay to the fabrication of the molds, molding, decoration, and firing are handled in-house.

For this reason, when promoting expansion of production capacities in the ceramic industry with the aim of increasing the volume of exports of ceramic products of Thailand, it is believed that it will be important to [1] give priority to the support of manufacturers with over 60 workers and [2] to give support to small sized manufacturers so as to bring them up to 60-worker production system levels.

(3) Lampang Manufacturers Producing Large Percentages of Products for Domestic

In Lampang, there are believed to be many manufacturers stressing production and shipment of products for the domestic market. Even manufacturers with over 60 workers mostly were seen as having high percentages of production and shipment of products for the domestic market.

The Lampang manufacturers, it was felt, have less chances of contact with trading companies and marketing companies, which serve as channels to the export markets, compared with manufacturers in Bangkok and Chiang Mai. One of the reasons is that the percentage of export products is lower in the ceramic manufacturers of Lampang. In other words, there are few manufacturers producing products suitable for export which draw the attention of the trading companies and marketing companies, and there is a general image of Lampang ceramics being low priced, low quality products for the domestic market.

**5-3. Dependence on External Specialized Companies**

Table IV-5-3 shows the general state of processes which ceramic manufacturers handle in-house and processes for which they rely on outside specialized companies.

**Table IV-5-3. General State of Processes**

	Chiang Mai	Lampang	Bangkok and environs		Large size	Japanese export manufacturers
			Medium /small size	Joint ventures with foreign capital		
Rinsing of raw materials	in-house	in-house	Outside	Outside	Outside	Outside
Blending of clay	in-house	in-house	In-house/ outside	Outside	in-house	Outside
Fabrication of mother molds	in-house	in-house	in-house	Outside	in-house	Outside
Fabrication of usage molds	in-house	in-house	in-house	In-house	in-house	Outside
Molding	in-house	in-house	in-house	in-house	in-house	In-house
Painting	In-house	in-house	in-house	in-house	in-house	In-house/ outside
Firing	in-house	in-house	in-house	In-house	in-house	In-house

The majority of the manufacturers in Chiang Mai and Lampang handled all the processes from manufacture of the clay to fabrication of the molds, molding, painting, and firing In-house and did not rely on outside specialists, it was seen. Also, almost all the manufacturers in Bangkok and its environs relied on specialized companies for the manufacture of the clay and handled the rest of the processes In-house. Japanese ceramic manufacturers rely to a large degree on external specialized companies. This is in sharp contrast to the situation in Thailand.

The lack of many production systems using external specialized companies in the Thai ceramic industry is believed to be largely due to the following management situations:

- [1] The market is not sufficiently large in size for specialized companies to be able to operate
- [2] Therefore, there are not that many specialized companies
- [3] There is not that much of a need for reduction of prime costs in the production of the current types of products.

There are both merits and demerits to using an external specialized company. In the Thai ceramic industry, the merits and demerits to the use of external specialized companies are generally as follows:

#### Merits

- [1] The manufacturers are able to reduce their own areas of technical control and therefore can more easily invest money, engineers, and other limited management resources into the improvement of quality.
- [2] Production costs may be expected to decrease through mass production. This would be an important point in that the reduction of production costs would enable price competitiveness to be maintained when trying to improve product qualities and increase one's share of the market for mass production goods.

#### Demerits

- [1] The use of external specialized companies would lead to a leveling of quality among the different companies and could weaken the individuality of the products.
- [2] The level of quality would improve overall, but the development of



products of outstanding quality might become difficult.

In Lampang, many ceramic manufacturers were seen as washing the materials and mixing the clay in-house, but this is believed to be because [1] there are no clay manufacturers in Lampang and [2] it is possible to make inexpensive clay using the local stone as a principal material. However, the clay prepared in-house, is unstable in quality. Further, this could easily block the improvement of product quality and product yields - essential when aiming at an expansion of exports of Lampang ceramics.

Several difficulties are envisioned in individual manufacturers attempting to improve the quality of the clay they produce in-house. For example, [1] even if the companies were each to introduce the necessary production facilities, they would find it hard to recover their investment, [2] there is a shortage of technicians with the knowledge and technical skill necessary for producing clay, and [3] it would take companies a large time to train such technicians. For these reasons, there is a good chance that Lampang ceramic manufacturers, aside from the few manufacturers with relatively large production scales, would not make much progress if they tried to improve their material lines themselves.

Therefore, it is considered that it would be effective in both time, money, and manpower, in ensuring a stable quality of clay and thus laying the foundation for the expansion of exports of Lampang ceramics, to encourage specialized clay manufacturers to locate in Lampang and to establish a system where these would supply stable quality clay to the ceramic manufacturers.

However, the majority of the Lampang ceramic manufacturers are currently preparing their clay in-house, so even if specialized clay manufacturers were promoted, the large question would remain as to whether they would be able to secure enough customers to operate successfully. It will be necessary to consider some means of support in this regard.

#### **5-4. Expansion of Production Capacity**

At the present time, exports of Thai ceramic products are growing. Here, a look is taken at the state of expansion of production capacity of the ceramic manufacturers through the manufacturers visited. Table IV-5-4 shows the state of expansion of production capacity in the manufacturers visited.

Table IV-5-4. State of Expansion of Production Capacity in Manufacturers Visited

	Chiang Mai	Lampang	Medium /small size	Bangkok and environs with foreign capital	large size
State of expansion in past one year and next two years	Not much seen. Only plans for increase of workers (1 company out of 11).	Seen in manufacturers engaged primarily in exports (3 out of 15 companies)	Seen in manufacturers engaged primarily in exports (8 out of 13 companies)	Still only about one year from start of operation, so full operating state still not reached. Scheduled to reach full operation in coming year (2 out of 2 companies).	Seen (2 out of 3 companies)
State of establishment of new companies in past one year	Not seen.	Not much (1 out of 15 companies)	Establishment of manufacturers engaged primarily in production for domestic market (4 out of 13 companies).	Establishment aimed at export. (2 out of 2 companies).	

The overall impression was that along with the rapid increase in the volume of exports of ceramic products of Thailand in these past few years, there has been progress made in expansion of production capacities, primarily among manufacturers emphasizing production of export goods. However, there were the following differences among the regions.

(1) Chiang Mai

Chiang Mai has many manufacturers which produce large percentages of export products and products for foreign tourists, but it was not felt that any moves were being made to expand production capacities. In so far as the manufacturers visited went, some places were planning to increase the number of their workers, but there were no plans for expansion of production facilities.

(2) Lampang

Manufacturers with high ratios of export products were expanding their factories. Lampang further has a relatively large number of manufacturers which produce mainly products for the domestic market, but not much movement was seen to expand production capacities there.

### (3) Bangkok and Environs

In this region, there were active moves being made to expand production facilities, it was felt. In particular, manufacturers producing primarily export products were seen as briskly expanding their production capacities. This included not only increases in the number of workers, but also expansion of capacity in terms of facilities, such as with the increase in the number of kilns and the construction of new factories.

Some of the companies in Bangkok engaged in marketing activities primarily for exports were pushing forward with plans to enter the field of production of ceramics on their own.

The current survey showed that the production capacities of manufacturers engaged primarily in exports are being increased. Still, there are several points of concern when it comes to the question as to if the production capacities of export products will be able to keep up with the recent speed of increase of exports of Thai ceramics in the future, i.e., [1] there is concern over the shortage of management staff and engineers and [2] the growing shortage in skilled workers for hand painting and other jobs. To ensure that the trend in the market for a growth in the share of Thai exports of ceramics does not change, it is considered important to consider first of all means for resolving these two problems.

#### [1] Concern Over Shortage of Management Staff and Engineers

Many of the small and medium sized manufacturers are family operated. Among these, it appears that no system has been established for training management staff and foreman class workers. Further, when personnel develop to the level where they could serve as such staff or foremen, they apparently are not given much chance to take on managerial duties. Therefore, there is a tendency for personnel which have learned the technology to go independent. This is considered to make it difficult to promote an in-house division of labor for the expansion of production and sales. When small and medium sized manufacturers try to expand the scale of production and sales, there is concern that things might get out of control due to the limited managerial spans of the managers.

#### [2] Growing Shortage of Skilled Workers in Hand Painting Jobs Etc.

At the present time, many of the best selling export products of the small and

medium sized manufacturers are large sized items or hand painted items requiring skilled labor. When trying to expand production of these items, there is a chance that the shortage of skilled workers will prove a bottleneck. The shortage of skilled workers is already beginning to be felt among ceramic manufacturers expanding their capacities.

### 5-5. Environment of Industrial Sites

There are both merits and demerits to the regions where factories are located when operating factories for the purpose of producing export products. Table IV-5-5 shows a comparison of factory location in Chiang Mai and Lampang and in Bangkok and its environs from the viewpoint of the production of export products.

**Table IV-5-5. Comparison of Factory Location as Seen From Manufacturers of Export Ceramics**

	Chiang Mai/Lampang	Bangkok and environs
Procurement of labor force		
• Wage level	Advantageous	Disadvantageous
• Employment of general workers	Easy	Easy
Procurement of raw materials		
• Material costs	Advantageous	Disadvantageous
• Stability of quality	Disadvantageous	Advantageous
• Existence of specialized clay companies	None	Yes
Land Cost	Advantageous	Disadvantageous
Domestic transport for export	Disadvantageous	Advantageous
Existence of export related companies	Few	Many

#### (1) Procurement of Labor Force

The wage levels of general workers is lower overall in Chiang Mai and Lampang than in Bangkok and its environs. Further, manufacturers in Chiang Mai, Lampang, and Bangkok all stated it was easy to hire general workers. General workers, however, sometimes take off during the peak agricultural periods, making it difficult to maintain

stable production. This phenomenon, in particular, is often seen in Lampang and Chiang Mai.

(2) Procurement of Raw Materials

Manufacturers in Lampang use local stone and make their clay in-house so can keep the costs of materials down. The price of local raw materials in Lampang as of November 1989 was 750 to 1350 bahts per ton of washed materials (delivered at Bangkok factory) and 250 bahts per ton crude (delivered at Lampang mines). Even by mixing ball clay and the like in a base of local raw material, the Lampang manufacturers are able to keep the costs of raw materials lower than with purchasing clay from Compound Clay Company at a price of 3000 to 3300 bahts per ton like the Bangkok manufacturers. Due to the unstable composition of the stone in Lampang, the insufficient facilities for manufacturing materials in the companies, and the insufficient technical knowhow in manufacturing materials, however, it is difficult in certain aspects to achieve uniform quality. Also, there are no specialized clay manufacturers in Lampang.

There are specialized clay manufacturers in Bangkok and its environs and these can supply materials of a stabler quality than that in Lampang and Chiang Mai, but even that quality cannot be said to be sufficiently good. Foreign capital manufacturing joint ventures in Bangkok rely on imports for their raw materials due to the insufficient quality available domestically in Thailand.

(3) Land Costs

The cost of land acquired or leased for establishment of factories is lower in Chiang Mai and Lampang. When establishing a new factory, location there is advantageous to the extent of the reduction of the initial investment.

(4) Domestic Transport for Exports

Exports in many cases have to go through Bangkok due to the schedules of ports of loading. Exporting from Chiang Mai and Lampang assumes inland transport over about 700 kilometers to Bangkok. The cost of exports is higher by that amount in these two regions.

(5) Existence of Export Related Companies

Trading companies, marketing companies, and other export related companies exist in large numbers in Bangkok. Therefore, manufacturers of export ceramics located in Bangkok can enjoy an increased frequency of contact with such export related companies and therefore can enjoy a greater opportunity for acquiring information on preferences in the overseas markets and sales channels.

Further, it must not be overlooked that overseas buyers in most cases go through trading companies, marketing companies, etc. rather than directly contacting small and medium sized ceramic manufacturers. A marketing company in Bangkok has analyzed that the reason why overseas buyers use Thai marketing companies is that they require their services in quality control, delivery control, and consulting.

Looking at the overall situation, it is possible to reduce production costs in Chiang Mai and Lampang, but there are difficulties in maintaining contact with export channels. Therefore, manufacturers which ship products at low costs to the lower end domestic market could easily locate there, but for manufacturers engaged in the production of export products to go there, it would be necessary for some measures to be devised to draw the attention of export trading companies and marketing companies in Bangkok and measures to facilitate contact between export trading companies etc. and the Lampang ceramic manufacturers.

Further, production costs in Bangkok tend to be higher than in Lampang and Chiang Mai, so there is a growing possibility that Bangkok ceramic manufacturers will shift to markets of much higher priced products.

**5-6. Problems and Countermeasures**

Here, a summary is given of the problems in the management of ceramic manufacturers and the countermeasures for the same in trying to expand the exports of ceramic novelties and tableware of Thailand.

(1) Expansion of Production Capacity of Export Products in Small and Medium Sized Manufacturers

The trend in the global market for an expansion of the share of exports of Thai ceramics may be seen from the rapid rise in the volume of production of ceramics in

Thailand in recent years and the aggressive expansion of production capacities by ceramic manufacturers with high export ratios. There are apprehensions, however, over whether this expansion of the production capacity of export products can keep up with this expansion in demand in the future. There are the following points of concern:

[1] The small and medium sized manufacturers do not seem to be sufficiently set up for training management staff and the foreman class, making it difficult to organize a division of labor necessary for expansion of production and sales. If these small and medium sized manufacturers try to expand the scale of their production and sales, their managers will find it impossible to control things due to limitations in individual management capabilities.

[2] Many of the best selling export products of the small and medium sized manufacturers are large sized items or hand painted items requiring skilled labor. Some manufacturers, however, are already beginning to feel a shortage of skilled laborers.

Therefore, it is believed necessary to quickly study countermeasures in the following two areas:

[1] Support for expansion of production capacities of existing small and medium sized manufacturers. In particular, support stressing introduction of industrial designs, introduction of production control techniques aimed at increasing the productivity, training of painting and other skilled workers, and the like.

[2] Expansion of the number of manufacturers able to produce export products. Toward this end, measures to promote shifts of manufacturers from emphasis on production for the domestic market and the new establishment of manufacturers dealing with export products.

## (2) Stimulation of Effort in Export Products in Lampang

The manufacturers in Chiang Mai and Bangkok seem to be more positive in tackling export products than the manufacturers in Lampang. In Lampang, however, there are many cases of production and shipment of low cost, low quality products for the domestic market for inexpensive goods and therefore manufacturers do not seem positive about investing in human resources, facilities, or technology which would lead to higher production costs. So long as managers do not see an expansion of export sales channels

as leading to greater income, they will not move to investment in improving the quality of their products with the aim of exports.

The Lampang manufacturers have the following disadvantages compared with Bangkok manufacturers when dealing with production and shipment of export products, so measures would have to be considered which would compensate for these.

[1] Lampang manufacturers tend to have fewer opportunities than manufacturers in Bangkok and Chiang Mai for contacting trading companies and marketing companies, which serve as channels for export sales. Further, Lampang has few manufacturers producing products suitable for export, so the region may be said to lack appeal as a production center of ceramics. Therefore, measures are necessary for drawing the attention of the export trading companies and marketing companies in Bangkok and for facilitating contacts by export trading companies etc. with Lampang manufacturers.

[2] There are no clay manufacturers in Lampang, and the ceramic manufacturers all make their own clay using local materials. Due to the unstable composition of the stone and the insufficient facilities and knowhow for making these materials in the companies, the quality of the clay tends to be nonuniform, which often hinders improvement of the product quality and the product yield. The manufacturers would probably find it difficult to reclaim the investment in the facilities they would have to introduce and to secure the technicians necessary for clay manufacture when trying to improve the quality of the clay made in-house. However, even if this is difficult for individual ceramic manufacturers, if a clay specialty manufacturer is invited and commissioned with making clay totally, it still remains a possibility. Further, this method would result in more rapid improvements in clay quality. For this reason it is necessary to consider inviting a clay specialty manufacturer.

### (3) Motivation for Use of Lampang Ceramic Center

Even if technical support services were offered to ceramic manufacturers in the northern provinces with the aim of improving the quality of their products (for example, through the Lampang Ceramic Center), so long as the manufacturers stressed the domestic market for inexpensive goods in their sales policies, they would have no motivation for using the technical support services. In Lampang, most manufacturers produce primarily for the domestic market, so the rate of utilization of the technical



support services may become low.

Therefore, a campaign is necessary for enhancing the appeal of Lampang as production center for ceramics which would increase inquiries from export trading companies and marketing companies to Lampang.

## Chapter 6. Raw Materials

### 6-1. Domestic Raw Materials

For the raw materials for porcelain, both plastic materials such as kaolin, clay and pottery stone and non-plastic materials such as silica, feldspar, lime and talc are used.

For body, the three ingredients of kaolin, silica and feldspar are indispensable. Normally clay is used for a portion of the kaolin, in order to increase productivity. Pottery stone includes the three indispensable ingredients as body. However, depending on the condition of the ingredients, appropriate amounts of kaolin, clay, and feldspar are further added, and this becomes body.

For glaze, kaolin, silica, feldspar, lime and talc are the basic ingredients.

Table IV-6-1, shows the availability of domestic raw materials and its main producing areas. Most of the principal raw materials can be obtained domestically.

**Table IV-6-1. Raw Materials and Main Producing Area in Thailand**

Raw Material	Domestic Usability	Main Producing Area
Kaolin	Possible	Prachinburi, Ranong
Clay	Possible	Chiang Mai, Surathani, Chantaburi
Pottery Stone	Possible	Lampang, Nakornsri
Silica	Possible	Various places
Feldspar	Possible	Tak
Lime	Possible	Various places
Talc	Impossible	-----

#### (1) Clay Materials

In Table IV-6-2, chemical analysis data obtained from CERMAS CO., LTD. is given concerning kaolin and ball clay as of 1986. This analytical data is viewed as compared with the common analytical data of kaolin and ball clay for white porcelain.

**Kaolin:** The content of  $\text{Fe}_2\text{O}_3$  is normally between 0.2% and 0.8%. However, the kaolin from Prachinburi and Ranong are high at 1.25% and 1.38% respectively. This cannot be said to be good from the standpoint of whiteness. Further, the content of  $\text{Al}_2\text{O}_3$  is normally between 35% and 37%, however the Prachinburi kaolin is low at 29.3%. This shows low purity for kaolin, and means that other substances are contained.

**Ball Clay:** The most important quality of ball clay is its plasticity, and the content of  $\text{Al}_2\text{O}_3$  is extremely important. Normally, between 32% to 36% of  $\text{Al}_2\text{O}_3$ , and under 1.5% if  $\text{Fe}_2\text{O}_3$  is contained. The ball clay in Chantaburi, Prachinburi and Surathani contain relatively low amounts of  $\text{Al}_2\text{O}_3$  at 27.2%, 22.8% and 26.8% respectively, and relatively large amounts of  $\text{Fe}_2\text{O}_3$ , at 1.38%, 3.50% and 1.62% respectively.

From looking at this chemical analysis data alone, it appears that the raw materials for clay in Thailand are slightly insufficient for use in high class white porcelain, but are sufficient for use in medium class white porcelain.

**Table IV-6-2. Chemical Analysis Data of Thai Produced Clay Materials**

	Washed Kaolin		Ball Clay		
	Prachinburi	Ranong	Chanthaburi	Prachinburi	Surathani
SiO <sub>2</sub>	57.6	49.3	55.5	60.7	48.2
Al <sub>2</sub> O <sub>3</sub>	29.3	35.1	27.2	22.6	26.8
Fe <sub>2</sub> O <sub>3</sub>	1.25	1.22	1.38	3.50	1.62
TiO <sub>2</sub>	1.07	0.11	0.35	0.79	0.37
CaO	0.07	0.07	0.09	0.15	0.36
MgO	0.10	0.22	0.20	1.05	0.39
K <sub>2</sub> O	0.26	2.30	1.62	2.42	2.58
Na <sub>2</sub> O	0.01	0.19	0.03	0.19	0.12
Loss	10.32	11.52	13.68	8.57	19.55

(2) Lampang Stone

Lampang stone is a useful material for ceramics. It belongs to the category of China stone. Similar materials are widely used in Japan too. Due to its origin, however, the quality varies and therefore it should be used with sufficient control.

In this survey, a visit was made to Thai Kaolin Co. who is one of the leading miners in Lampang. Thai Kaolin Co. has a washing factory for Lampang stone and ships out the following products:

AA.	325 mesh pass.	1,350 B/t (delivered in Bangkok)
A.	250 "	1,000 B/t ( " )
B.	200 "	750 B/t ( " )
Crude		250 B/t (delivered at foot of Lampang mountains)

Judging from the chemical analysis values obtained (Table IV-6-3), there are believed to be possibilities of variations in quality. Due to the difference in the time of the sampling, the test methods, etc., it cannot be decisively concluded right off that there are variations.

In the future, it will be necessary to obtain the cooperation of the miners and

establish a stance of utilizing stable raw materials.

**Table IV-6-3. Chemical Analysis Data of Lampang Stone**

	Crude (*1)	Grade B (*1)	Grade A (*1)	Grade AA (*1)	Crude (*2)	Grade AA (*2)
SiO <sub>2</sub>	74.1	61.7	53.9	51.0	76.6	61.9
Al <sub>2</sub> O <sub>3</sub>	17.3	25.8	29.9	32.1	16.1	26.3
Fe <sub>2</sub> O <sub>3</sub>	0.9	1.5	1.3	1.5	0.57	0.71
TiO <sub>2</sub>	—	—	—	—	0.07	0.05
CaO	—	0.73	0.62	0.95	0.03	0.04
MgO	—	0.64	0.72	0.36	—	0.03
K <sub>2</sub> O	3.30	4.38	5.49	5.73	3.46	5.48
Na <sub>2</sub> O	0.13	0.83	1.27	1.16	—	0.01
Loss	4.08	4.31	6.25	6.56	3.36	5.18

(\*1) Analysis data in 1977 from Tahí Kaolin Co.

(\*2) Analysis data in 1987 from Japanese porcelain manufacture.

(3) Feldspar

At present in Thailand, potash feldspars, sodium feldspars and aplite are being mined and used. Feldspar differs from clay raw materials in that, through selective mining, its quality can be improved to a certain extent. As a raw material in porcelain, in order to obtain better quality domestic feldspar, it is at least necessary to improve the understanding between miners and porcelain manufacturers.

Table IV-6-4 is the chemical analysis data for 1986 of Tak produced feldspar which was obtained by CERMAS Co., Ltd.

**TableIV-6-4. Chemical Analysis Value of Feldspars**

	Potash Feldspar	Soda Feldspar	Aplite
SiO <sub>2</sub>	65.7	70.5	75.3
Al <sub>2</sub> O <sub>3</sub>	18.7	17.2	14.1
Fe <sub>2</sub> O <sub>3</sub>	0.15	0.27	0.39
TiO <sub>2</sub>	0.11	0.31	0.08
CaO	0.16	1.09	0.51
MgO	0.11	0.37	0.15
K <sub>2</sub> O	12.20	0.51	5.34
Na <sub>2</sub> O	2.60	9.31	3.63
Loss	0.30	0.47	0.59

(4) Silica

For Silica, high quality silica is used as a raw material in porcelain.

For the silica for body, Lampang stone is used. The silica for glaze as well is generally of good quality.

**6-2. Problems and Countermeasures**

Lampang stone is the main raw material for the Thai ceramics industry. With recent increases in ceramic production, production of Lampang stone is growing. However, fluctuations in the quality of the stone shipped by mining companies have had an adverse impact on the quality of finished products.

Stone taken from the Lampang mountains is characterized by varying composition; some areas produce soft, clay-rich stone and others hard, silica-rich varieties.

Recent increases in shipments from Lampang have found the mining companies there hard-pressed to meet demand, resulting in declining quality. Since this stone is used by the ceramic manufacturers, it is feared that they will have difficulties in maintaining the quality of their finished products. The first step to improve the quality of finished products is to stabilize the quality of raw materials.

Therefore, it is necessary to investigate the stone quality at the Lampang production site and to control the quality of each shipment. The introduction of testing facilities and relevant know-how will be necessary as well.

## **Chapter 7. Supporting Industries**

### **7-1. Manufacturing Machinery**

In Table IV-7-1, the condition of the movement towards domestic production of ceramic manufacturing machinery is shown. At present, it is possible to use domestic products for ball mills, filter presses, hand jiggers and shuttle kilns. For the other manufacturing machinery, Thailand relies on imports.

No kiln manufacturers are seen, however, there are many cases where the ceramic manufacturers made their own shuttle kilns. However, Thailand relies on imports for tunnel kilns, electric furnaces, and high temperature firing shuttle kilns.



**Table IV-7-1. State of Domestic Production of Porcelain Producing Machinery**

Producing Machinery	State of Domestic Production
<b>Kneading</b>	
Ball mill	O
Extruder	—
Diaphragm pump	—
Filter press	O
Ferro filter	—
<b>Molding</b>	
Automatic jiggering machine	—
Vacuum agitator	—
Hand jigger	O
<b>Firing</b>	
Tunnel kiln	—
Shuttle kiln	O
Electric kiln	—

### **7-2. Kiln Furniture**

Formally, import products from Taiwan and Japan had been used for kiln furniture such as saggars, shelves, and support pillars. However, in Thailand as well, pursuant to the increase in demand, these kiln furniture have begun to be manufactured by the Siam Cement Corporation. They are manufacturing various components for use in tunnel kilns, shuttle kilns and electric furnaces.

Kiln furniture which have been domestically produced are of silicon carbide. Mullite and carbolite could not be seen. Kiln furniture of these materials are inferior to silicon carbide in terms of heat conducting capacity, but have a price advantage.

In the future, it is quite possible that the domestic kiln furniture of these materials will be available, and it would be desirable for the Thai ceramic manufacturers to expand their selection of kiln furniture.

### **7-3. Pigments**

Pigments include stains for over-glaze decoration, under-glaze decoration, color glaze, colored body and liquid gold (for Bencharong), etc.

These pigments are presently mostly imported from Japan, West Germany, etc. Pigments for blue and white decoration are prepared in-house in some manufacturers. Pigments are essential materials for production. Liquid gold is particularly expensive, however. So it is desirable that some special measures will be taken regarding imports of pigments.

### **7-4. Problems and Countermeasures**

Ceramic machine tool manufacturers are almost completely absent. Ball mills are produced domestically, but are defective in that the number of revolutions cannot be adequately controlled. Further, there are no manufacturers specializing in kilns.

The following two factors can be given as reasons for the lack of ceramic machine tool manufacturers in Thailand:

1. Due to the lack progress of modernization within the ceramic manufacturing industry, the demand for machine tools is small.
2. The machine tool market is small, and the operations of the machinery manufacturers are in an environment in which it is difficult to develop.

In the future, along with the development of the ceramic industry, it can be expected that machine tool manufacturers will gradually develop as well. However, as previously, the situation of relying on imports for much of Thailand's ceramic machine tools will continue for the present. Modernization of production facilities is indispensable for the expansion of ceramic exports. For this reason, at present it is necessary to take the measure of promoting the importation of machine tools.

**PART-V.  
TOTAL REVIEW OF FIRST  
TO THIRD YEAR SURVEYS**



## **PART-V. TOTAL REVIEW OF FIRST TO THIRD YEAR SURVEYS**

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## **PART-V. Total Review of First to Third Year Surveys**

### **Chapter 1. Experience of Industrial Policies in East Asia**

#### **1-1. Industrial Policies in Japan**

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After the second world war, Japan focused on the basic industrial fields and devised a series of incentives in taxation, financing, etc. for the same, thereby leading the country from reconstruction of its industries to its subsequent high growth and forming its unique "sectorial industrial promotion measures" (also known as "targeting policies").

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Right after the second world war, Japan found itself in ruins and lagged tremendously behind the advanced nations in industrial technology. Under these conditions, it began the reconstruction of its economy. At the first stage, it placed emphasis on the establishment of infrastructure and the basic industries such as electric power, coal, iron and steel, and shipbuilding. Already at this stage it had established the basic framework of its industrial policies, setting up incentives for priority sectors in taxation, financing, and introduction of foreign capital.

In the high growth period starting from the late 1950s, Japan incorporated a series of technical innovations and launched a multilateral industrial policy expanding its industrial base, promoting new growth industries, and protecting and adjusting declining industries with the aims of both import substitution and export oriented. In the promotion of new growth industries, it selected priority industries of synthetic fibers, petrochemicals, general machinery and parts, and electronic equipment and established incentives for the same such as reductions and exemption of taxes and tariffs, low interest financing, permits for introduction of foreign technology, and exemptions of application of the Antimonopoly Law. Further, private industrial organizations in the different industries played important roles in liaison and coordinating opinions among companies or with the Ministry of International Trade and Industry and other related organizations.

In 1960, the Japanese government announced its outline of plans for liberalization of trade and foreign exchange. Since then, the Japanese economy has been moving from protectionist trade to a free trade system. In 1964, it joined the OECD and took up the issue of liberalization of direct investment in Japan by foreign companies. In 1967, it

began liberalizing capital. The aim of the industrial policy at this time was to prevent damage to industries due to the liberalization. Japan went about reorganizing industry, coordinating capital investment, coordinating fields of production, etc. to strengthen the international competitiveness of industry, primarily through "administrative guidance" and coordination of the public and private sectors.

In the process, the method was adopted of using the market mechanism and inducing the development of industry through coordination of the public and private sectors. As a result, Japanese industry underwent unprecedented high growth during this period and led to the firm entrenchment of Japan's own unique style of a free business system.

In the 1970s, due to the progress in liberalization of trade and capital and the widespread recognition of the effectiveness of the market mechanism, the emphasis in industrial policy became the establishment of a so-called "vision", i.e., the formulation of a desirable blueprint for future industry based on the direction of change of the industrial structure. The main purpose of the government became to establish such a vision through cooperation of the public and private sectors and the provision of information for guiding industrial activity. The subsidies, low interest financing, and tax incentives became very limited in range. This framework of things has been substantially maintained in the 1980s.



## 1-2. Industrial Policies in Korea

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Korea learned from the experience of Japan in converting from import substitution type industries to export oriented ones, focusing on key industries and mobilizing tariff, tax, and financial means to protect and encourage them. In its subsequent policies for the promotion of basic industries (steel, engineering, chemical etc.), it used similar means and achieved tremendous success.

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Korea began full-scale reconstruction of its economy and development of its industry in 1954, when the Korean Conflict ended. The industrial development during this period was mainly aimed at the import substitution industries, such as food, textiles, and apparel, relying on material assistance from the U.S. The government allocated material assistance to companies established by assets inherited from the colonial period from the viewpoint of promotion of private Korean business and further decided to use a double tiered exchange rate for the promotion of import substitution industries and the accumulation of capital there.

In the 1960s, the military government used its strong powers of control and *foreign capital and moved to the promotion of export oriented industries.* The government set a series of targets in its first five-year plan for economic development and along with this devised various incentives for export oriented industries. The industries covered were textiles, light industries, and industries processing agricultural produce. On the other hand, it organized numerous publically run companies, including those established by assets from the colonial period, in the field of financing, energy, and infrastructure to provide the underlying support for industrial activity.

The protection and encouragement of export industries were primarily by tax, tariff, and financial means. In particular, exemption of import tariffs on production facilities and raw materials, exemption of business taxes on export industries, and low interest financing using foreign loans proved very effective. Further, the series of export promotion activities of the Korean Trade Promotion Agency (KOTRA) also helped the development of the export industries. Due to all this, rapid growth was achieved in the export industries in both the textile and light industries.

Korea began aggressive industrialization in the heavy machinery and chemical

industries in its third five-year plan, which began 1972, and in its plan for the construction of heavy and chemical industries, which was formulated in 1973. This was designed to promote self-sufficiency in the raw materials and machinery required for the already developed industries such as textiles and light industries and to promote new export industries such as iron and steel, shipbuilding, electronics, automobiles, chemicals and other "heavy machinery and chemical industries".

At this stage, the powerful financial groups which had been formed through the industrial development up to then submitted various plans of activity to the government, which then selected plans for the respective industries and issued the necessary permits for introduction of the necessary foreign capital and technology or put to use the series of protective measures or incentives used in the past for promotion of implementation of the plans. At that time, in particular, the government made in leadership felt in a major way in the financing activities of the de facto government controlled financial institutions. Further, the export promotion activities of the Korean Trade Promotion Agency (KOTRA) were further expanded and proved effective.

During this time, Korea borrowed increasing amounts from abroad each year and inflation became chronic, resulting in major strains in the economy. However, during that time, shipbuilding, automobiles, electronics, and the like developed into export industries and great strides were made in industrial development through the shift to heavy machinery and chemical industries. Due to this, Korea established a position for itself as one of the leading NIEs (newly industrialized economies) in the global economy.

### 1-3. Industrial Policies in Taiwan

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Taiwan relied on general incentives in its initial program of export oriented industrialization. In the subsequent promotion of basic industries and promotion of more sophisticated export industries, it designated key industrial sectors and adopted means mobilizing a series of incentives.

---

Taiwan went about rebuilding its economy after the second world war and industrializing with a clear differentiation between publically run companies and private companies. Most of the assets in Taiwan confiscated from the Japanese were reorganized into publically run companies which took over basic industries such as sugar, power, and oil. Of the confiscated assets, the cement and papermaking industries and the small sized companies were passed over to the private sector. This helped convert the capital of large landowners etc. into industrial capital. In addition to this, the government supported the development of import substitution type industries such as textiles and food by private companies through allocations of imported materials received through aid from the U.S.

Taiwan began moving to the promotion of export oriented industries several years earlier than Korea in the late 1950s. The easing of export and import controls after 1958, the introduction of a linkage system of foreign exchange for exports and imports, tax incentives and low interest financing for export industries, and the aggressive foreign investment measures starting 1960 promoted investment from private companies and foreign firms. From 1965, additional means were taken such as the establishment of export processing zones. Through these measures, it developed the textile, food processing, light industrial product, and electronic component and household electrical appliance industries as export industries. Almost all of these was through activities of private companies. Through all this, large numbers of medium and small sized companies were born and powerful financial groups were formed centered around leading companies.

In the 1970s, Taiwan continued promoting export oriented industries as in the past and, through the "10 large construction project plan" of 1973 on went ahead to establish infrastructure and promote basic industries. The iron and steel, shipbuilding, and petrochemical industries were built through massive investment by publically run companies. On the other hand, through investment by private companies and foreign

firms, the export industries grew much larger, the financial groups became stronger, and small and medium sized companies were developed. At the end of the 1970s, however, Taiwan suffered from the effects of the second oil crisis and the shipbuilding and petrochemical public companies fell into trouble.

In the 1980s, the government set its sights of raising the level of advancement of its industries and designated high-tech fields such as electronic and data processing, machinery, and automobiles as "strategic industries". It promoted these industries by positive promotion of foreign investment, research and development and technical transfers by public organizations, and low interest financing and tax and tariff incentives. Further, under the "central satellite factory system" started in 1984, the government encouraged leading companies to establish affiliations with small and medium sized companies and transfer technology to the same. These measures may be considered to have been of great assistance in the development of high-tech industries and expansion of exports through the support of the activities of Taiwan's private companies.

**Table V-1. History of Industrial Promotion Policies and Export Promotion Policies in Japan, Korea and Taiwan**

Japan	Korea	Taiwan
<b>&lt;Industrial Promotion Policies&gt;</b>		
<p><b>Postwar Reconstruction Period (1946-48)</b>            "Priority Production System"            Material Quota/            Reconversion Finance Bank            Loans/Price Control</p>		
<p><b>Industrial Rationalization Period (the first half of 1950's)</b>            Preferential Treatment for equipment investment (special depreciations)/Loans from the Japan Development Bank/Tax Exemptions</p>	<p><b>After The Disturbance in Korea (1950's)</b>            Import Substitutional Industrial Development Promotion Aids Quota System/Double Exchange Rate/Tax Exemption for Raw Materials &amp; Machinery</p>	<p><b>Import Substitutional Industrialization Period (the first half of 1950's)</b>            Adjustment of Public Key Industries-Sugar, Cement, Fertilizer, ... etc./Textile Industry Promotion with Bave Import Quota</p>
<p><b>Industrial Development Promotion Period (the latter half of 50's)</b>            Synthetic Fiber, Petrochemical, Electronics, Machinery            Tariff Protection/Selective Fiscal , Financial Policy (Loans from the Japan Development Bank, Depreciations, Tax Exemptions &amp; Reductions)/Approval of Technology Introduction</p>		<p><b>Transitional Period to Export Oriented Industry (the latter half of 50's)</b>            Adjustment of Public Key Industry/Textile , Agricultural Product Processing Industry Development.</p>
<p><b>High-Growth Period (1960's)</b>            Building an Open Economy. Industry-Government Cooperation System (Investment Adjustment/Co-ordination of Production Field/Industry-by-Industry Development Programs (Law on Extraordinary Measures for Machinery Industries/Law on Extraordinary Measures for Electronic Industries.)</p>	<p><b>Transition to Export Oriented Industrialization (1960's)</b>            Stressing Economic Growth. Introduction of Foreign Capital (Mainly Loans)/Export Light Industry Promotion/ Tax Exemptions/Key Industry Promotion With The Government Initiative &amp; Intervention</p>	<p><b>Export Oriented Industrialization in Full-Swing (1960's)</b>            Introduction of Foreign Capital (Loans &amp; Direct Investment)/Focusing on Private Sector/Export Processing Zone/Tax Exemptions &amp; Deductions/Trading Company Promotion</p>
<p><b>Stable Growth Period (1970-)</b>            Drawing up "Vision", Utilizing Market Mechanism. Knowledge-Intensive Industry. High Technology Development.</p>	<p><b>Export Oriented , Heavy &amp; Chemical Industrialization (1970's)</b>            "Heavy &amp; Chemical Industrial-Strategic Industrial Development Plan"            Government Controlled Financing Organization. Export Industry , Heavy &amp; Chemical Industries Promotion With Low-Interest Loan. Expansion of Equipments in Private Enterprises.</p>	<p><b>Heavy &amp; Chemical Industrialization (1970's)</b>            10 Major Development Plan            Foundation of Public Enterprises of Iron &amp; Steel, Oil and Shipping/Social Capital Adjustment</p>
	<p><b>Liberalization , Heavy Chemical Industries Co-ordination (1980's)</b>            Economic Liberalization.</p>	<p><b>High Technology Promotion (1980's)</b>            Specifying Strategic Industry.</p>

Japan	Korea	Taiwan
	<p>Leaving Public Cooperation to Private, Foreign Capital Liberalization, Finance Liberalization, heavy &amp; Chemical Industries Co-ordination Small-and Medium-size Enterprises Promotion</p>	<p>Tax Exemptions for Electronics &amp; Machinery/Low-interest Loans/Preferential Revenue Fund/Automobile Industry Promotion.</p>
<b>&lt;Export Industry Promotion and Export Promotion Policies&gt;</b>		
<p><b>Industrial Rationalization Period (the first half of 1950's)</b> Financial Preferential Measures. Export Preferential Finance (Low Interest Rate Reduction of the Bank of Japan)/ Foundation of the Export Bank of Japan in 1950. Tax Preferential Measures. Export Income Deduction Special Deduction for Export Export Insurance. Foundation of JETRO.</p>	<p><b>After the Disturbance in Korea (1950's)</b> Export Promotion in Import Substitutional Industrialization Export Promotion Fund/ Export Credit Finance/ Foreign Currency Deposit/ Export Subsidiaries (but Export was depressed)</p>	<p><b>Import Substitutional Industrialization Period (the first half of 1950's)</b> Public Key Industry Adjustment/Bave of USA Aids Import Quota/Multiple Exchange Rate/Double Price System</p>
<p><b>Industrial Development Promotion Period (the latter half of 1950's)</b> Shipment Export (Loans from Export-Import Bank of Japan) Special Deduction of Incomes related to overseas transactions</p>		<p><b>Transition Period to Export Oriented Industrialization (the latter half of 1950's)</b> Starting Rice, Sugar, Agricultural Processing Products Export (Public Sector)/ Export , Import Exchange Link System</p>
<p><b>High-Growth Period (1960's)</b> Economic Liberalization, Strengthening International Competitiveness. Plant Export (Loans from Export-Import Bank of Japan) Special Deduction for Exports Overseas Market Development Reverse System Expansion of JETRO</p>	<p><b>Transition to Export Oriented Industrialization (1960's)</b> Private Enterprises Promotion in Export Industry/ Direct Subsidiaries/Low Interest Loans/Accelerated Depreciation/Tax Exemptions &amp; Deductions (Cost Reduction) Export Light Industry (Textile , Wig) Promotion</p>	<p><b>Export Oriented Industrialization in Full Swing (1960's)</b> Exceptional Loans/Export Loans/Export Processing Zone/Trade Company Promotion/Trade Company Promotion/Tax Preferential Treatment by Investment Act./Introduction of Foreign Capital</p>
	<p><b>Export Industry Rapid Growth Period (1970's)</b> Expansion of Low Interest Loan/Export Processing Zone/Won Devaluation/Sogo-Shosha System/ Export-Import Bank of Korea/Introduction of Value Added Tax</p>	<p><b>Export Industry Advanced Period (1970's)</b> Strengthening Public Enterprises/Export Insurance/ Export Import Bank's Medium- &amp; Long-Term Export Loan System/Foreign Trade Development Association (Far East Trade Service)</p>
	<p><b>Coping With Trade Conflict (1980's)</b> Export Self-Constraint/ Enterprise Advances to U.S.A. Promoting Open Market</p>	

## **Chapter 2. "East Asian Style" Industrial Policy**

### **2-1. Concept of Industrial Policy**

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The concept of industrial policies gradually became clearer and more solidified through the series of industrial promotion measures used in Japan after the Second World War. The success of the same has been recognized and similar forms of policies have been adopted by Korea and in part by Taiwan. Here, these may be called "East Asian style" industrial policies.

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The concept of an "industrial policy" is a new one which arose after the second world war when the Japanese government launched a series of policies for the promotion of industrial development. From the late 1960s to the 1970s, Japan enjoyed remarkable industrial growth and this concept gradually became entrenched and drew international interest. Because of this, in 1970, the Assistant Secretary of the Ministry of International Trade and Industry gave a speech on "Japan's industrial policy" before the industrial committee of the OECD and, further, in 1972, the OECD Secretariat issued a report entitled the "Industrial Policy of Japan".

Even before that, terms similar to "industrial policy" had been used in Western Europe. For example, in France, a concept similar to that of an industrial policy was used in the "l'economie concertee" idea of cooperation between the government, state companies, and private companies in the promotion of development of key industries. In Italy, this type of term and concept was used in discussions of the functions and roles of the IRI, ENI, and other state owned organizations and companies under them. However, Japan was the first place where a clear concept made its appearance and the term became entrenched in use.

In 1973, the Japanese Ministry of International Trade and Industry made massive organizational reforms and as part of this launched an "Industrial Policy Bureau". This made the term "industrial policy" even more entrenched. Along with this, the range of policies of MITI, that is, adjustment of production and investment, the modernization and reorganization of industry, promotion of exports, promotion of research and development activities, and resource and energy policies and small and medium enterprise policies, became recognized as the range of an industrial policy.

The target in the trade liberalization and capital liberalization of the 1960s had been the establishment of international competitiveness in Japanese industry. On the other hand, with the progress in liberalization, industrial activities in accordance with the market mechanism gradually became prevalent and the range of government intervention became narrower. The government tried to maintain its influence in specific industries through adoption of a "system of public-private cooperation", but the "1970s Vision" announced by the Industrial Structure Council in May 1970 called for the "maximum use of the market mechanism" and the government thereupon decided on a major shift in its industrial policy. Since then, the Japanese government has laid an emphasis on guiding industrial activities by the provision of information in the form of "visions" showing the desirable future direction of industrial activities.

The concept and methods of industrial policy created and fixed in the world mind by Japan appeared in similar forms in the economic policies and industrial promotion measures of Korea and Taiwan, as mentioned in the sections on the experiences of these two regions. This was because of the high marks given to the industrial policy of Japan, which enabled an industry which had started later than the advanced countries to catch up to the level of the advanced nations and the same thinking and methods were used, though perhaps only in part. Therefore, it should be possible to extract the common points of the industrial policies of Japan, Korea, and Taiwan and to develop a concept of an "East Asian style industrial policy".



## 2-2. Sectorial Approach

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"East Asian style" industrial policies feature designation of specific industrial sectors for promotion and mobilization of various incentives in a concentrated or limited time fashion. The specific industries are designated with reference to the history of industrial development in the advanced countries.

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One of the common features seen in "East Asian style" industrial policies is the designation of specific industries for promotion and the mobilization of various incentives for the same for limited time periods. Part of the reason for this is the relative ease of selection of industries to be developed next along with the various stages of economic development. Further, the selection of industries is considered necessary too for the most effective use of available funds, foreign currency, resources, and manpower.

In general, industrial development starts with labor intensive industries and moves on to capital intensive or technology intensive industries, that is, from low to high fields of added value. Therefore, it was not that difficult to select the industries to target next at each stage of economic or industrial development, based on the experiences of the advanced industrialized nations.

In the case of East Asia, very generally, the targeted industries have been, in the following order, [1] import substitution industries effective for saving foreign currency, [2] labor intensive export industries able to contribute to acquisition of foreign currency, [3] heavy machinery and chemical industries for the supply of raw materials and machinery, [4] capital intensive and technology intensive export industries, [5] technologically advanced export industries. At the present time, this order of selection has been widely recognized as being the most suitable.

In the long history of industrial development in the western nations, there were few cases of government selection of industries to be targeted for development by private companies, leaving aside special cases such as military supply industries in the time of war. In the western nations, due in part to rising socialist leanings, industries considered necessary for national reasons have rather been established through state run or publically run companies or through nationalization of private companies. In France and Italy after the second world war, economic and industrial development was promoted through

cooperation between the government and private sector, but even then state run and publically run companies, semipublic companies, government participated companies played the central role in industries considered necessary while receiving financial support.

In this regard, it may be said that there were almost no previous examples of an industrial policy which had selected specific industries as targets for development and mobilized a series of promotional measures for encouraging development of private companies with that aim.

### 2-3. Means for Promotion of Selected Industries

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The means used for promoting the key industrial sectors have basically been incentives in tariffs, taxes, and financing and have further included lifting or easing of restrictions, support for research and development, and establishment of "visions" for the industries.

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There are several common points among Japan, Korea, and Taiwan in the means for promotion or incentives used for promotion of industries selected as development targets. This is probably because Korea and Taiwan used the experience of Japan, which had first launched and achieved success through sectorial promotion measures, as reference to some extent.

The main promotional means used for the sectorial promotion measures in East Asia were as follows:

[1] Tariff incentives - Abatement of import tariffs on the machinery and equipment, parts, and raw materials necessary the industries

Japan waived import duties on key machinery from 1951 to 1960. Specifically, it designated industrial machinery which would be difficult to produce domestically in Japan and which was though necessary for Japan's industrial development and waived import duties on the same. It incorporated similar measures for exemption of tariffs in the series of sectorial promotion measures subsequently formulated and implemented (for example, in the Law of Temporary Measures for the Promotion of the Machinery Industry).

Korea established exemptions of import duties on raw materials for export goods (later changing this to a tariff rebate system), exemptions on import duties for capital equipment for producing export goods, etc. through the 1960s and 1970s. Further, from the second five-year plan beginning in 1967, it incorporated these measures into its comprehensive incentive package for individual industries.

Taiwan established a rebate system for import tariffs (and indirect taxes) on imported raw materials used for export goods in parallel with the easing of its import controls over the intermediate goods and capital goods required for exports after 1960.

These tariff incentives were offered with a stress on "industries for promotion" specified by the government.

[2] Tax incentives - Special (accelerated) depreciation on the machinery and equipment for specified industries and abatement of business taxes, corporate taxes, etc.

Japan established a new system for faster depreciation of important machinery in 1951 with the aim of renovation of ageing machinery and equipment and strengthening of international competitiveness. Here, the government allowed a special depreciation 50 percent higher than normal depreciation over three years for specific machinery and equipment it designated. Further, it established a system for special depreciation for exports for companies increasing their exports wherein it recognized a further higher depreciation. In addition, it established a system of deduction of export income used from 1953 to 1963, abatement of the rate of withholding taxes on the usage fees for important foreign technology, special deductions for overseas transactions in technology etc., tax exemptions on experimental research costs, and the like. This series of incentives was also incorporate in later sectorial industrial promotion schemes, but in particular the 1957 tax reforms led to the institution of an "exemption for important materials" for products of new industries like petrochemical products, machinery parts, basic machinery, and electronic machinery.

Korea, starting in 1961, offered a 50 percent reduction of taxes on export income, accumulation of depreciation for equipment used for producing export products, exemption of sales taxes on the export industries, etc. Starting in the late 1960s, it incorporated these in sectorial industrial promotion schemes and further added tax abatement measures for expenses for development of export markets, export losses, etc.

Taiwan offered various incentives in taxes for exports. In particular, the measure for waiver of taxes on export income proved to be a major incentive. In the promotion measures for strategic industries formulated in the 1980s, it expanded the internal holdings of profits and waived or reduced income taxes.

[3] Financial incentives - Low term low interest financing for capital investment and purchases of machinery in specific industries, financing of low interest funds for purchases of raw materials or exports, guarantees for these, etc.

Japan started a plan for rationalization of industry aimed at iron and steel, coal,

resource development, shipbuilding, etc. in the early 1950s after a period of financing by the Reconstruction Financing Corporation after the second world war. Under this, it provided financial incentives such as special tax measures, allocations of foreign currency and incentives in introduction of foreign technology, low interest financing by the Japan Export Bank (later the Export-Import Bank of Japan) and Japan Development Bank through fiscal investment and financing and supplementation of interests to the shipping industry.

Starting in the mid 1960s, the Japan Development Bank provided low interest financing for capital investment in the automobile industry and the petrochemical industry and for raising the technical level in auto parts, machine tools, and electronics as a form of support for sectorial industrial promotional measures. The Export Bank placed an emphasis on low interest financing for exports of ships, plants, and machinery. In addition, starting 1953 there was the low interest financing offered to small and medium enterprise type industries by the Small Business Finance Corporation.

The fiscal financing and investment made use of the excess funds of the postal savings and national pension accounts as fund sources and were used for direct loans to public organizations and also low interest "policy financing" through public financial institutions. There were also cases of "cooperation financing" combining the policy financing of public financial institutions and financing by commercial financial institutions.

Korea procured foreign funding through bilateral loans and government guaranteed commercial loans and used the same for financing sectors contributing to exports through public and private financial institutions. This meant in actuality low interest financing due to the double tiered exchange rate system and the double tiered structure of the banks and private bond market and was effective in promoting industry. This type of financing was seen in the export financing from 1950, the financing of imports of export use materials starting in the 1960s, and the supplementary financing to the export industries.

Taiwan did not at first offer many special incentives for export due in part to the fact that public companies handled the major part of exports at the start, but in the 1960s provided special financing for specific industries and preferential financing for exports.

[4] Lifting or easing of controls - Lifting or easing of controls in areas relating

to promoted imports in the case of controls on introduction of foreign capital, introduction of foreign technology, new establishment of facilities, etc.

Japan went about rebuilding its industries and then promoting their development starting with the controlled economy it inherited from the second world war. Therefore, it began its first industrial policy in an existing system of controls over imports of a wide range of materials, restrictions on use of foreign currency, and restrictions on introduction of foreign technology and foreign capital. As a result, the lifting or easing of controls on a selective basis for the industries to be promoted and the materials, technology, and capital required by the same proved effective in themselves as measures for promotion of those industries. The effectiveness of this gradually disappeared along with the progress made in trade liberalization starting in the early 1960s and the capital liberalization from the late 1960s, but these measures were still considerably effective up to the early 1970s.

Korea had a wide range of government controls over imports, fund procurement, and the introduction of capital and technology from abroad from the 1950s to the 1970s, so the lifting or easing of part of the same along with targets of promotion of export industries or export promotion often proved effective in themselves as industrial promotion measures. The fore-mentioned tariff and financial incentives were often in a sense liftings or easing of controls and thus were that much more effective.

Taiwan had placed all economic activities under strict government control under the martial law instituted in 1949 and stressed public companies in basic industrial sectors, but at the same time avoided "exceptional" government intervention in fields directly connected to exports such as textiles, light industries, and electronics and encouraged private company activities in those fields. This, together with a series of promotional measures, led to the rapid growth of the export industries.

[5] Support for research and development activities - Government assistance for research and development activities in specific industries or tax and financial incentives for the same

In this area, Japan established the tariff and tax incentives mentioned earlier in the 1950s (for example, exemption of tariffs on equipment and deductions of taxes for experimental research costs), but the main aim there was the introduction of technology to fill the technological gap. Starting in the 1960s, however, it placed emphasis on more direct promotional measures so as to strengthen the research and development capabilities

of Japanese companies. One of these was the tax incentives given to the "Mining and Manufacturing Technology Research Association" formed by research funds and capital from several companies. Another was the system of allocation of subsidies for research and development funds for mining and manufacturing industries, consignment of research and development of major industrial technology, etc. to private companies. Further, starting in the 1970s, it allocated subsidies and consigned research and development for specific fields such as computers, passenger aircraft, energy, and next generation industrial technology (new materials, biotechnology, etc.)

Korea also first primarily used the various promotional measures aimed at promoting introduction of technology, but in the 1980s devised measures for supporting the research and development activities of domestic companies aimed at key industrial sectors. For example, as part of the policies for the long term plan for advancement of the electronics industry, it established a fund for promotion of the electronics industry through which it provided long term low interest financing of the new product development activities of companies. Further, it organized the "Small and Medium Enterprise Research Association" for the promotion of research and development of small business and established systems for support of the association's activities. Still further, in 1987, it launched a system of support for the "Industrial Technology Research Association" formed by private companies.

Taiwan tackled the support of research and development activities in the 1980s and established a "Hsinchu Science and Industrial Park" for concentrated research and development of production activities high-tech industries. In the late 1980s, it formulated a long term plan for the development of science and technology and in that came out with a policy of promoting the corporate level of research and development activities.

[6] Establishment of targets and "visions" - Drawing of pictures of specified industries five or 10 years hence and use of the same as common directions for government policies and activities of private companies

Japan made great progress in the liberalization of trade and capital in the 1970s on and therefore, with the exception of measures for small business, tax and financial incentives for specific industries declined rapidly in importance. Instead, the establishment of "visions" became increasingly important as a tool of industrial policy. These "visions" indicate the direction of change of the industrial structure and international relations and constitute valuable government information to private industry.

The government establishes whatever policy measures it can in that direction so as to guide the activities of private companies in that direction.

The "vision for the 1970s" formulated by the Japanese Ministry of International Trade and Industry predicted a knowledge intensification of the industrial structure and called for the promotion of frontline technology industries (ICs, computers, industrial robots, fine chemicals, etc.), advanced assembly industries (aircraft, NC machine tools, etc.), the fashion industry, data processing and supply industries, etc. The "vision for the 1980s" predicted "creative knowledge intensification" and called for effort in the development of biotechnologies, new materials, new energy, fifth generation computers, and other advanced front line technologies.

Korea established and followed through on targets and measures for economic development since 1962 in the form of five year economic development plans, so these substantially served as industrial "visions". These plans showed industrial sectors to be promoted and further incorporated a series of policy measures for realization of the same. In the first and second plans, Korea targeted the promotion of export type industries and in the fourth and fifth plans targeted the promotion of high tech industries. In the sixth plan starting 1987, it is mainly targeting the advancement of high tech industries and the increase of the added value in traditional industries. Aside from this, the "Challenge to the Future - Industrial Structure and Policy Measures" announced by the government affiliated research institute KDI (Korean Development Institute) drew a picture of the Korean economy and industry in the years 2000 to 2010. This is also serving as a vision for the future.

Taiwan has established eight four year plans (or six year plans) for economic construction since 1953 and the "10 big construction projects", "12 construction projects", "14 construction projects", etc. formulated and implemented as large scale public works. These served both as policy targets and as visions. Further, in the 1980s, it formulated a basic strategy for industrialization and designated the machinery, transport equipment, electrical and electronic equipment, and information industries as strategic industries. This also served as a "vision".



## **2-4. Coordination and Cooperation Between Government and Private Industry**

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In the promotion of key industrial sectors, the method has been adopted where the sections in charge of the industries in the government, industrial organizations in those industries, etc. play central roles in the exchange of opinions and information between the government and private industry, establishment development goals in a cooperative manner, and engage in activities for the promotion of those industries.

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The government and private industry each play major roles in the decision making and implementation of Japan's industrial policy and the effectiveness of the policy has considered to have been achieved through the coordination and cooperation between the same.

On the government side, the policy sections having responsibility for direct supervision of the industries have been the central players. For example, in the Ministry of International Trade and Industry, there are divisions in charge of iron and steel, automobiles, machinery, textiles, etc. which collect domestic and overseas information and analyze the same to make proposals for and implement policies necessary for the development of their industries. Their duties include formulation of laws for the promotion of specific industries (including tax and financial incentives), changes in tariff rates and trade and investment systems, approval of introduction of facilities and technology and of foreign investment and joint ventures (in the case where so empowered) and formulation of visions.

The policies proposed by the divisions are coordinated among the other related divisions, departments and ministries as needed. Inside the Ministry of International Trade and Industry, coordination is performed with the so-called "horizontal" bureaus of international trade policy, industrial policy, and industrial location and pollution. Policies relating to tariffs taxes, and financing are coordinated with the related departments of the Ministry of Finance. In addition, there are cases where coordination is required with the legal department of the Cabinet, the Fair Trade (Anti-Monopoly) Commission, etc.

On the other hand, the departments in charge of the various industries maintain close cooperative ties with the industrial organizations formed by the companies in those

industries. This is to enable them to obtain the necessary information and ideas for formulation of policies and to prevent differences in thinking between the government and private companies and coordinate interests of private companies.

The industrial organizations differ in size, purpose and activities. However, the national level industrial organizations work to exchange, coordinate, and bring together the opinions of the member companies and have the important task of maintaining contact with and exchanging information and opinions with the government divisions in charge of their industries. The presidents or chairmans of the industrial organizations are in most cases selected from managers of leading member companies, which serve as representatives of the industry during their terms. In the leading industrial organizations, retired officials with experience in work in the related government departments in many cases serve as executive directors or administrative directors.

The industrial organizations also often engage in various activities for the support of the realization of policies of the government departments from their position as representatives of the interests of their industries. Leading industrial organizations have political influence due to their political contributions and for this reason alone their support often is effective in assisting the realization of policies of the related divisions.

The relation between the government divisions and industrial organizations changes in nature according to the situation the industries are in and the relationship of power between the two. The general idea is that the divisions display leadership at the stage when the industries are immature and that the divisions become more of intermediaries in nature when the industries develop to an advanced level.

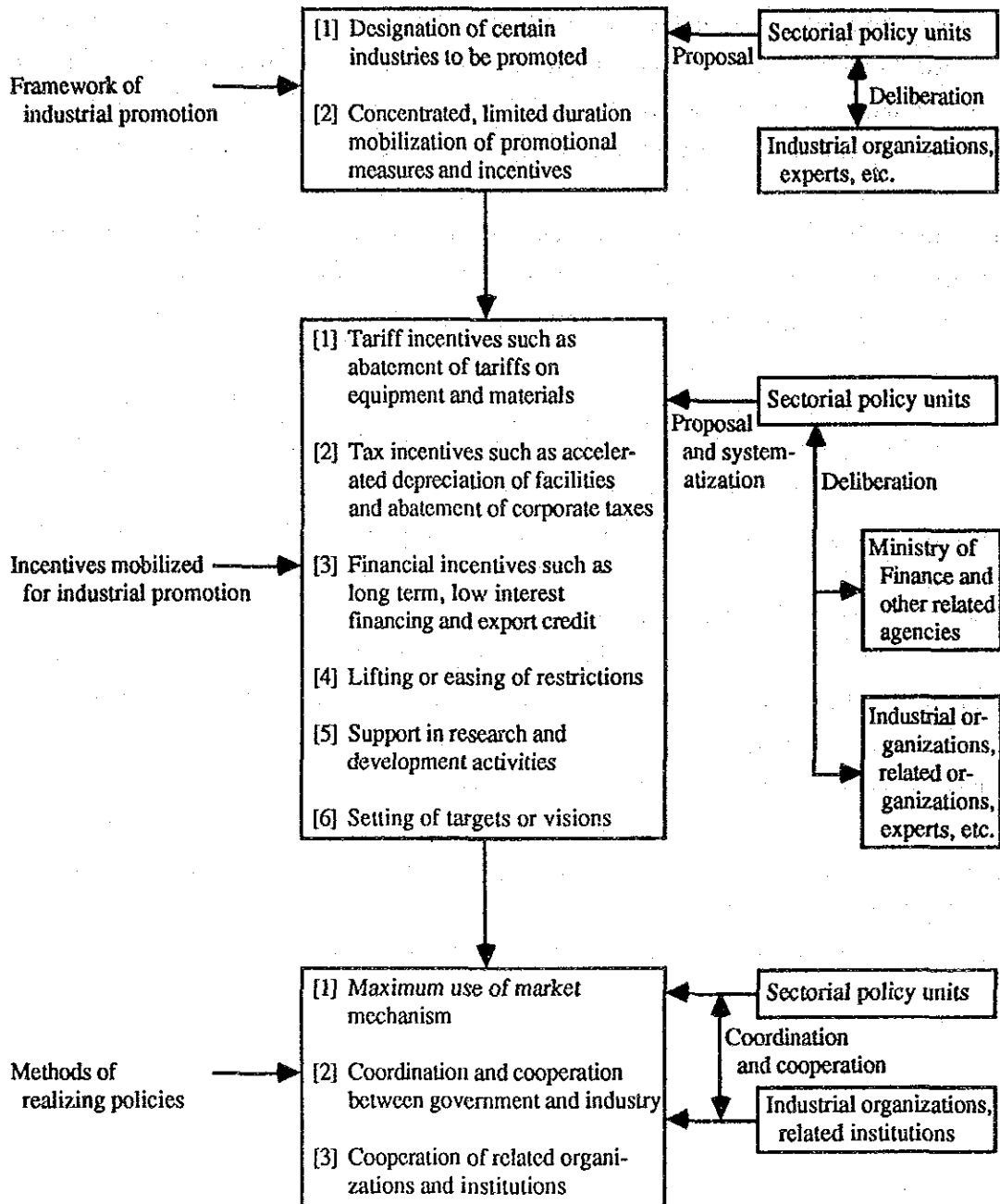
On the other hand, the "council" system is used in many cases in decision making in important industrial policies. These councils are established as advisory organizations of the ministers concerned and include as members leaders of the specific industry and also academics and journalists. They solicit opinions regarding draft policies proposed by the divisions concerned and coordinate interests of the parties concerned. They are also considered effective means for the collection, exchange, and propagation of information concerning the industries in question.

Korea copied the Japanese industrial organization system starting in the 1950s and established national organizations such as the "National Economic Leader Federation",

"Korean Chamber of Commerce and Industry", and "Central Association of Small Business Cooperative Associations" and, in parallel with the same, numerous industry-wise or regional organizations. These organizations, like in the case of Japan, served to represent their respective industries and to coordinate interests within the industries. Overall, however, due to the emphasis on government leadership in policy implementation in Korea and the strong influence of financial groups in industry, the industrial organizations have played relatively small roles and have been primarily passive in dealings with the government. In the 1980s, however, there has been a shift from government leadership to private leadership in economic management and also an emphasis has been placed on the promotion of small and medium sized enterprises, so the role of industrial organizations is becoming stronger.

In Taiwan, various business organizations were set up at an early stage of industrial development (in general known as "industrial associations"). The leading organizations have played important roles in interfacing with the government and collecting and publicizing data. On the other hand, in 1985, an "Economic Innovation Commission" comprised of government, business, and academic leaders was established as a provisional advisory organ of the administrative government so as to draft and help realize economic and industrial policies to deal with the severe international situation Taiwan was placed in. Under that were established "industrial and trade subcommittees" which worked actively to promote the flow of information and opinions between the government and industry. Among the proposals made by the Commission to the administrative government was one for learning from Japan and West Germany and strengthening commercial and industrial organizations to promote their participation in development planning. Taiwan's administrative government and industry are moving in the direction of stronger coordination and cooperation learning from Japan.

**Fig. V-1. Features of "East Asian Style" Industrial Policy**



## **Chapter 3. Small and Medium Enterprise Policies**

### **3-1. Significance of Existence of Small and Medium Sized Enterprises**

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To maintain the vitality of industrial activities, it is recognized that it is desirable not only to prevent monopolies, but also to maintain a balanced coexistence between large corporations and small and medium sized enterprises in the industrial structure so as to form a "social division of labor". Therefore, even the advanced nations often have policies for the promotion of small and medium sized businesses.

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In general, in the process of industrial development, the "benefit of scale" is sought along with advances of technology. Through the expansion of the size of production facilities, the expansion of sales networks, and the growth of corporate organizations corresponding to the same, numerous "large companies" grow and play central roles in industrial development. On the other hand, however, large companies concentrate in activity in fields suited for mass production and mass sales, so "gaps" are created to which the large companies do not reach in their activities. Therefore, numerous small and medium sized enterprises develop in parallel with the large companies and fill these gaps and a "social division of labor" is formed between the large companies and the small and medium sized enterprises.

On the other hand, the large companies themselves tend increasingly to lose flexibility as businesses due to the fixed nature of their assets and the expansion of their management expenses and to deal with this concentrate their own production in efficient basic fields as much as possible and have supplementary fields of business handled by small and medium sized enterprises and subcontractors in many cases. This also promotes the development of a "social division of labor" between the large companies and the small and medium sized enterprises.

The coexistence of the large companies and the small and medium sized enterprises also makes it possible for small and medium sized enterprises with strong growth potential to gradually expand their businesses into the fields of activity of the large companies or to increase in size through development of new products and new technology and thus grow into large companies. This prevents the large companies from maintaining monopolistic positions and creates competition among large companies or

large companies and small and medium sized enterprises and therefore has the effect of maintaining the dynamism of industrial development.

Recently, demand and preferences in the world market have been diversifying and becoming more individualized and there has thus been an increase in the fields which small and medium sized enterprises can handle easier than the large companies. Further, there are many fields suited to the activities of small and medium sized enterprises in the many new growing service industries. The "social division of labor" between large companies and small and medium sized enterprises is heading in the direction of further development.

Today, it is recognized in all the advanced industrialized nations of the world that the balanced, coexistence between large companies and small and medium sized enterprises in the industrial structure is desirable in dealing with social demand and in maintaining the vitality of industrial activities. However, in some countries, at some times, the development of large companies inhibits or crushes the development of small and medium sized enterprises and cottage sized enterprises. There have been quite a few examples of this. The "formation of monopolies" pointed out by economists refers to this.

A type of industrial development wherein the development of large companies inhibits or drives out the development of small and medium sized enterprises, due to the formation of monopolies, is disadvantageous to the consumer and makes it difficult to meet demand in "gap" areas. Further, the loss of small and medium sized enterprises in supplementary business fields is disadvantageous to the activities of the large companies themselves. The recognition has gradually spread that all this is disadvantageous to economic and industrial development. Along with this, recognition has come of the real problems of the small and medium sized enterprises in regard to the targets for desirable economic development and the balance of the industrial structure and "small and medium sized enterprise policies" have been established as means of dealing with the same.

### 3-2. Small and Medium Enterprise Policy of Japan

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Japan has had policies for the promotion of small businesses as part of its industrial policies based on the Small and Medium Enterprise Basic Law enacted in 1963. The law provides for measures for the promotion of small and medium sized enterprises overall and measures for promotion of specific industries.

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Japan established various measures for the promotion of small and medium sized enterprises at an early stage, but it is only relatively recently that it has established a small and medium sized enterprise policy as an important part of its industrial policy. This was with the establishment of the Medium and Small Enterprise Basic Law in 1963. The basic concept of Japan's small and medium sized enterprise policy is made clear in that law.

The Medium and Small Enterprise Basic Law, in its preamble, which corresponds to a supplementary provision, evaluates small and medium sized enterprises as having "contributed to the development of the national economy in all fields such as the expansion of mining and industrial production, smooth distribution of commodities, exploitation of overseas markets, and the increase of employment opportunity and have at the same time rendered great services in the stability of the national living" and considers that they "will be important continuously for the growth and development of the national economy and the stabilization of the people's lives in the future". It further clearly stipulates the basic idea that a policy of "correcting disadvantages due to the economic and social deterrence of medium and small enterprises as well as by respecting initiative of medium and small enterprises and by encouraging their voluntary efforts while paying such appropriate consideration as to heighten the standard of living of employees in small-scaled enterprises especially" is a duty imposed on the people.

Based on this idea, the basic law sets down the following three goals for the small and medium sized enterprise policy:

- (1) The rectification of disadvantages of small and medium sized enterprises due to economic and social deterrence
- (2) Assistance in the voluntary effort of the small and medium sized enterprises
- (3) Rectification of disparities in production etc. among companies so as to promote the development of small and medium sized enterprises and improve

the economic and social positions of their workers

Article 3 of the Medium and Small Enterprise Basic Law sets down the following measures as necessary for achievement of the above three policy goals:

- (1) Modernization of facilities (introduction of modernized facilities etc.)
- (2) Elevation of technology (research and development of technology, training of technicians and skilled workers, etc.)
- (3) Rationalization of management (introduction of modern management methods, improvement of capabilities of managers, etc.)
- (4) Raising of the level of the structure of small and medium sized enterprises (rectifying the size of companies, joint operation of business, stimulation of collective establishment of factories and stores, conversion of business, modernization of management in retailing, etc.)
- (5) Rectification of disadvantages in terms of trade (prevention of excess competition, rectification of subcontracting business, etc.)
- (6) Promotion of demand (promotion of exports etc.)
- (7) Ensurement of suitable opportunity for business activities (coordination of business activities of parties other than small and medium sized enterprises)
- (8) Rectification of labor relations, improvement of worker welfare, ensurement of necessary work force

Further, the law stipulates that the government must take legal and fiscal measures to implement these measures and has the obligation of making yearly reports to the Diet on the trends in small and medium sized enterprises and the measures taken for the same.

The Medium and Small Enterprise Basic Law arranges these necessary measures in the following system:

- (1) Improvement of the structure of small and medium sized enterprises (modernization of facilities, improvement of technology, rationalization of management, rectification of size of companies, joint operation of businesses, conversion of businesses, rectification of labor relations)
- (2) Rectification of disadvantages in business activities (prevention of excess competition, rectification of terms of trade, ensuring of opportunity for business activities, ensuring of opportunities for orders from the government etc., promotion of exports, and coordination with the amount of imports)



- (3) Special measures such as for improvement of the management of small-sized enterprises
- (4) Special measures in financing, taxation, etc. (smoothing of financing and augmentation of corporate capital)
- (5) Establishment of administrative organizations and small and medium enterprise organizations (establishment of organization for administering small and medium sized enterprises and establishment of small and medium sized enterprise organizations)

A new system of promotion was established by the enactment of the Medium and Small Enterprise Basic Law and fixed as a policy system. Subsequent to that, new institutions were established to deal with changes in the times and the system further augmented and improved to where it stands today.

**Table V-2. Organization of Small and Medium Enterprise Policies of Japan**

**1. Modernization and advancement of SMEs**

- (1) **Modernization by industry:**  
Measures for modernization of SMEs by industry (Small and Medium Enterprise Modernization Promotion Law)
- (2) **Financing for advancement:**  
System of financing of Small and Medium Enterprise Corporation (Small and Medium Enterprise Promotion Fund Assistance Law)
- (3) **Improvement of management resources:**  
System of diagnosis, guidance, information, training, technical promotion, guidance for internationalization, etc. by government, local bodies, Small Enterprise Corporation, etc. (Small and Medium Enterprise Guidance Law)
- (4) **Organization:**  
System of promotion of joint operation of business and collective business (Small and Medium Enterprise Cooperative Association Law)
- (5) **Small and medium commerce and service measures:**  
Promotion and coordination of commerce (Small and Medium Retail Commerce Promotion Law, Shopping District Promotion Association Law, Law on Special Measures for Adjusting Retail Commerce)
- (6) **Business conversion:**  
Measures for business conversion (Law on Provisional Measures for Conversion of Business of Small and Medium Enterprises)
- (7) **Measures for regional SMEs :**  
Measures for SMEs in production areas, indigenous industries, special industrial regions, etc. (Law on Provisional Measures for Small and Medium Enterprises in Production Areas, Law on Provisional Measures for Small and Medium Enterprises in Specific Recession Areas, Law on Provisional Measures for Small and Medium Enterprises in Specific Industries)

**2. Stabilization of Management**

- (1) **Financial assistance:**  
Financing by government financial institutions, fund assistance for strengthening SMEs, credit supplementation system
- (2) **Tax measures:**  
Reduced tax rates, remuneration to business owners, special depreciation, reserves, and other systems
- (3) **Improvement of net worth:**  
Investment by Small and Medium Enterprise Investment Promotion Co.

- (4) **Prevention of bankruptcies:**  
Mutual aid for prevention of bankruptcies, financing, consultations, guarantees, and other systems

### 3. Correction of Disadvantages in Business Activities

- (1) **Promotion of subcontractors:**  
Prevention of delayed payment of subcontracting fees, introduction of subcontracting business, and ensurement of fairness
- (2) **Ensurement of government and public demand:**  
Participation of SMEs in government and public demand
- (3) **Rectification of business activities:**  
Coordination and ensurement of business fields (Law for Adjustment of Fields of Small and Medium Enterprises, Large-Sized Retail Store Law, Law for Special Measures to Adjust Retail Commerce, Law Regarding Organizations of Small and Medium Enterprises, Small and Medium Enterprise Cooperative Association Law)

### 4. Small enterprise measures

- (1) **Project for improvement of management:**  
System of management guidance by commerce and industry associations and chambers of commerce and industry
- (2) **Individual consultation and guidance system:**  
Guidance by small business counsellors
- (3) **System for financing improvement of management of small businesses:**  
Financing without collateral or guarantor
- (4) **System for funding modernization of equipment:**  
Investment of funds for modernization of equipment and leasing of equipment
- (5) **System of mutual aid for small businesses:**  
Mutual aid system for abandonment of business etc.

Source: K. Fujita, M. Takeuchi, "Small Business Theory", Yuhikaku, 1987

### 3-3. Small and Medium Enterprise Policies of Korea and Taiwan

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Korea stressed the development of strong financial groups in the early stages of its industrialization and therefore development of small businesses was delayed. In the 1980s, however, it strengthened measures for promotion of small businesses and took concrete steps such as the selection of key industrial sectors and establishment of incentives. Taiwan launched a "central satellite factory system" in the 1980s with the aim of raising the level of its small businesses, under which the government has been supporting the development of small and medium sized enterprises.

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In the initial stages of industrialization, Korea exerted effort in the promotion of financial groups and therefore was said to have hindered the growth of small and medium sized enterprises. In 1966, it followed the example of Japan and established a "Small and Medium Enterprise Basic Law" and even called for the "protection and promotion of small and medium sized enterprises" in its constitution, but these measures cannot be said to have been that effective.

In the 1980s, export industries enjoyed rapid growth and the financial groups continued to expand at a fast rate. In all this, the government came to recognize much more strongly the need for promotion of small and medium sized enterprises and came to consider the effective implementation of its small and medium sized enterprise policy to be necessary. At the end of 1982, it made a series of amendments to the laws relating to small and medium sized enterprises. In the "Small and Medium Enterprise Basic Law", it clearly set down the selection of priority industries for promotion and priority assistance and further called for drafting and implementing promotion plans for local small and medium sized enterprises, handicraft industries, etc.

The specific measures established were primarily financial incentives. For example, it established low interest funding and investment through the Small and Medium Sized Enterprise Promotion Fund etc. (acceptance of shares and bonds) and the "Small and Medium Enterprise Advance Financing" through banks etc. Further, it launched the government affiliated "Small and Medium Enterprise Promotion Corporation" for providing technical training and guidance to small and medium sized enterprises.

In the latter half of the 1980s, Korea formulated a "Plan for the Promotion of Basic Production Technology" as a program for promotion of specific key industries and announced plans for the promotion of small and medium sized enterprises in the metalworking and machine parts industries. This program incorporated measures such as the formation of industrial estates, tax and financial assistance, assistance in training technicians and skilled workers, and aid for research and development.

Taiwan, in contrast, enjoyed smooth development of small and medium sized enterprises and cottage sized enterprises due to the little government intervention in fields other than basic industries and, in a common pattern, some of these went on to grow into major companies. Therefore, there was never that great a need for promotion of small and medium sized enterprises as in Japan and Korea.

Even so, in the 1980s, the government came to realize the importance of raising the level of small, medium, and cottage sized enterprises and improving the level of their technology. In accordance with this, it launched a "Central Satellite Factory System" and provided various assistance for the formation of an organic division of labor among large companies and cottage sized, small, and medium enterprises. This, it is considered, was based on studies of the "subcontracting system" between large companies and small and medium sized enterprises formed spontaneously in Japan.

### **3-4. Small and Medium Enterprise Policy and Sectorial Promotion Measures**

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Small and medium enterprise policies have two aspects to them: continuous policy schemes covering small business as a whole and short duration policy schemes for key industrial sectors. Together with the sectorial industrial promotional measures covering large companies as well, the small and medium sized enterprises in the key industrial sectors are able to make use of different policy schemes.

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In several of the advanced industrialized nations and in Korea and Taiwan, sectorial promotion measures were taken to promote important basic industries, strategic industries, and export industries in the process of industrial development. The general method used was the selection of important industries and assistance to the same through financial, tax, and tariff incentives, supply of raw materials or energy, assistance in research and development, etc. In some cases the desired results were not achieved, but in the end success was achieved in many cases.

Among the small and medium sized enterprise policies, there were quite a few cases of sectorial promotion measures devised for fields in which many small and medium sized enterprises were active or industrial fields considered suitable for small and medium sized enterprises. In Japan's small and medium sized enterprise policy, several industries were designated and promoted through a "small and medium enterprise modernization plan".

An important assumption in a sectorial approach is that a series of promotion measures be applied to selected "specific industrial sectors" for a "limited time period". This is because the "important industrial sectors" of a country change with each stage of economic and industrial development and further because a greater effect can be achieved by concentrating a series of promotional measures in a limited time period.

In the experience of Japan, the overall small and medium sized enterprise policies have been set as permanent policy schemes while sectorial promotion measures have been devised as limited duration policy schemes. Further, in general, the incentives given to the overall small and medium sized enterprise policies have been "broad based but shallow" while those given to the sectorial promotion measures have been "narrow but deep".

Therefore, small and medium sized enterprises belonging to key industrial sectors have been able to make use of both these policy schemes.

Industries playing extremely important roles as supporting industries for export industries or industries with great growth potential as export industries, when comprised mainly of small and medium sized enterprises, require both measures for the promotion of small and medium sized enterprises and at the same time limited duration sectorial promotion measures. This in turn is also more effective.

## **Chapter 4. Case Studies of Sectorial Industrial Policies of East Asia**

### **4-1. Textile Industry**

#### **4-1-1. Policies for Promotion of Japan's Synthetic Fiber Industry**

##### **(1) Development of Japan's Textile Industry**

The Japanese textile industry began with silk and cotton during the process of industrial development of the Meiji era and accounted for over 40 percent of the value of industrial production in the early 19th century. It was further an important export industry. In the 1930s, Japan established a rayon industry and the cotton and rayon industries became the leading prewar textile industries. In the postwar reconstruction period and high growth period, the synthetic fiber industry rapidly grew and by the early 1970s Japan had reached the top level in the world's synthetic fiber producing countries.

Of the so-called three major synthetic fibers, nylon was industrialized by Du Pont of the U.S. before the second world war, while acrylic and polyester were industrialized after the war around the 1950s. Japan began research into vinylon, developed on its own, nylon, and other synthetic fibers in the late 1930s and while it never industrialized them due to the start of the second world war, had built up a certain level of technical expertise in the field.

##### **(2) "Conditions for Rapid Establishment of Synthetic Fiber Industry"**

In 1949, the Ministry of International Trade and Industry (MITI) established the "Conditions for Rapid Establishment of Synthetic Fiber Industry" and began promotion of synthetic fibers. It called for [1] the concentration of capital and technology for the rapid construction of economic unit factories for synthetic fibers and achievement of production and expansion of the export trade, [2] designation of vinylon and nylon as products of the highest priority from the viewpoint of technology and the supply of domestic materials, selection of a single company to take the lead in development, and concentration of assistance to the same for construction of economic unit factories, and [3] selection of Kurashiki Rayon as the leading development company for vinylon and Toyo Rayon for nylon. The government clearly was aiming at the promotion of a synthetic fiber industry and was after, in the short term, savings of foreign currency used for imports and, in the long term, improvement of the industrial structure and promotion



of exports.

Specific measures for promotion were quickly established based on the decision of the Ministry of Commerce and Industry. The main ones are summarized below:

1) Tax measures

- [1] Industries designated as important materials by Article 6 of the Corporate Tax Law: Exemption of three years from start of business  
Synthetic fibers and materials for same (designated March 1950 and again March 1957), of which vinylon, vinylidene, polyvinyl chloride, and spun yarn were covered up to 1960, nylon up to 1958, acrylic up to 1965, and polyester from 1958 on
- [2] Accelerated depreciation for synthetic fiber facilities: 1950 on
- [3] Abatement of local taxes (business taxes): 1951 on
- [4] 50 percent reduction of local taxes (fixed asset tax): 1954 on
- [5] Exemption of local taxes (electrical and gas tax): 1953 on for vinylon, nylon, etc. and 1958 on for polyester, acrylic, etc.

2) Financial measures

- [1] Financing for capital investment: fiscal 1950 to 1952 (funds using as collateral aid to Japan)
- [2] Subsidies for mining and industrial technology (fiscal 1950 on)
- [3] Subsidies for industrialization tests (fiscal 1951 on)
- [4] Subsidies for fishing nets made of synthetic fibers (fiscal 1952 on)

3) Trade related measures

- [1] Tariffs: 25 percent reduction for synthetic staple fiber, yarn, woven fabrics, and fishing nets (1951 on)
- [2] Tariffs: 30 percent reduction for synthetic fiber materials (1951 on)
- [3] Tariffs: Exemption of tariff on imported machinery

4) Others

- [1] Preferential treatment in railroad freight charges

- [2] Promotion of use of synthetic fibers by government and government organizations (Cabinet decision)
- [3] Encouragement of use of synthetic fiber fishing nets (Ministry of Fisheries)
- [4] Publicitization and promotion of synthetic fiber student uniforms (Ministry of International Trade and Industry and Ministry of Education)
- [5] Allocations of electric power
- [6] Promotion of chemical industries related to materials for synthetic fibers

Further, synthetic fibers is an export industries, so measures were also taken for the promotion of exports. The measures taken for promotion of synthetic fibers were applied comprehensively and overlappingly from the view point of postwar national policies. However, the number of institutions and measures does not indicate the actual extent of the incentives and the effect in reducing cost by the measures is unknown. Almost all the measures, including exemption of the corporate tax, accelerated depreciation, reduction or exemption of local taxes, and the financing of capital investment by the Japan Development Bank, research subsidies, preferential tariff treatment, etc. were applied to the industries for promotion as a package.

(3) "Plan for Promotion of Synthetic Fiber Industry"

The "Plan for Promotion of Synthetic Fiber Industry", decided on by a meeting of deputy ministers on April 2, 1953, was aimed at the establishment of a mass production system able to enjoy the economy of scale as an equipment industry. In summary, [1] it had as its object the establishment of a mass production industry, [2] called for the stimulation of demand by positive conversion to use of synthetic fibers by government organizations and the establishment of a "liaison council for promotion of use of synthetic fibers" for that purpose, and [3] set a target for production of synthetic fibers five years from then of about 100 million pounds a year. That is, the government, the main entity behind the promotion of synthetic fibers, was to try to increase demand for synthetic fibers and thereby create a full-scale mass production system.

(4) Conclusion

The following conclusions may be drawn regarding the industrial policy for synthetic fibers:

- [1] The policy for promotion of the industry began around 1950. At first,

concentrated industrial assistance was given to specific selected companies. Around 1960, along with the entry of large numbers of companies in the field of synthetic fibers, this was changed to "broader and shallower" industrial assistance to the overall synthetic fiber industry and to promotion of autonomous growth.

- [2] The industrial policy depended to a large extent on the economic environment of the times and on economic policies. In the case of the measures for promotion of the synthetic fiber industry, in the early 1950s, reliance was placed on strong compulsory measures such as foreign exchange controls and allocations of imported cotton and wool (imported cotton and wool were allocated on a priority basis for the production of mixed spun synthetic fiber so as to assist the production of mixed spun synthetic fiber), but starting from the middle of the 1960s, these controls were gradually eliminated due to the liberalization of trade, foreign exchange, and capital.
- [3] The Japanese synthetic fiber industry was at first strongly promoted from the viewpoint of promoting a fledgling industry and subsequently the promotional measures were changed to more broader based ones. This was due to the internal and external economic environment of Japan at the time.

#### **4-1-2. Development of Korean Textile Industry and Industrial Policy of Same**

##### **(1) Structure of Korean Textile Industry**

The development of the Korean textile industry may be divided into the following three stages for convenience sake:

- [1] Stage of introduction as modern industry (1910 to 1945)
- [2] Stage of equipping of industry and import substitution (1945 to 1961)
- [3] Stage of conversion to export industry and growth (1962 to 1979)

The textile industry began to arise as a modern, capitalistic business in Korea around 1910. In 1911, Keijo Bochu was established as a joint venture between Japan and Korea. In 1917, Mitsui established a cotton spinning factory there and in 1919 Seoul Spinning was established by Korean capital. In 1920, textiles accounted for 12.0 percent of the value of production in the manufacturing industries - third place after food and chemicals. At this time, Japan also instituted a program for increasing cotton production there as part of its colonial policies.

##### **(2) Import Substitution Stage (1945 to 1961)**

The defeat of Japan in August 1945 meant the start of a new era in Korea's economy, but since 94 percent of the manufacturing capital was Japanese, the country literally had to start from zero. To rebuild the textile industry, the government established a Cotton Spinning Industry Management Department in the Ministry of Commerce and Industry in June 1946. However, the textile industry fell into a critical state due to bottlenecks in the supply of materials and frequent strikes.

This situation was resolved by the consolidation of the textile industry through the establishment of the Korean Textile Association in April 1947 and the GAROA aid (Government and Relief in Occupied Area) which began in 1947. The Korean Textile Association played a leading role in the areas of reconstruction plans and supply of funds and served as a pipeline to the U.S.

In the period up until the outbreak of the Korean Conflict in 1950, the government failed to establish any clear policies for industry. Rather, the assistance policies of the

U.S. etc. may be said to have served that function. With the outbreak of the Korean Conflict in June 1950 and the textile recession in the late 1950s, however, the textile industry grew increasingly dependent on the U.S. in nature. This also changed the structure of production of the Korean textile industry. That is, the industry began converting from cotton to staple fiber in 1956 and began full-scale production in 1957. In that year, the five large companies converted their facilities to the production of spinning of staple fiber. This heralded the arrival of the mass export era of 1962 on.

In the above import substitution stage, the textile industry policy was substantially U.S. aid. Further, though receiving supplies of cotton from the U.S., Korea began exports, but this promoted the entrenchment of a deficit structure in its international balance of payments.

Aid from the U.S. flooded in with the Korean conflict and therefore Korea was able to import raw materials without having to worry that much about foreign currency. The textile industry, however, suffered from shortages of funds and required outside funds for the importation of cotton and other material aid. From 1954 to September 1958, 37.7 percent of the domestic investment of funds in the basic industrial sectors was for textiles - showing how much priority was given to the textile industry.

At the end of 1954, the Korean Industrial Bank was established. Throughout the 1950s, the bank provided financing for the textile industry. In the rules for financing formulated by the Bank of Korea, the cotton industry was designated as an important industry and first priority was given to it in loans. The loan conditions were also good and the interests were superlow. Capitalists in the cotton industrial sector were able in fact to accumulate capital by this financing, it has been pointed out.

Finally, it is necessary to touch on the tax policies in the industrial reconstruction policy. The tax policies for the promotion of companies in the import substitution period were diverse and covered tariffs, income taxes, corporate taxes, and sales taxes. For tariffs, the tariff for raw cotton was held at 10 percent throughout this period. Further, the 10 percent fabric tax newly established in 1950 was abolished in 1954 and was switched to a 15 percent commodity tax. Further, as a means for dealing with the textile recession in 1955 on, the commodity tax was waived for export goods in 1957 and was lowered to 5 percent even domestically. Measures were taken to reduce or waive corporate taxes for the cotton industry, and capital accumulation was promoted in this sector.

(3) Mass Export Stage (1962 to 1979)

During the import substitution stage, the textile industry was synonymous with the cotton industry, but starting in the late 1950s, production of manmade fibers began and the structure of the textile industry began to change.

An increase in demand for synthetic fibers already was seen in the late 1950s, and the production structure changed along with the same. That is, in the past, Korea imported raw fiber and spun or wove it, but this was changed to domestic production of the raw fiber itself. The domestic production of synthetic fiber was said to be the national policy of the time, with the government even providing loans for raising the rate of self-sufficiency. The problem, however, was the small size of the facilities. Overcoming this problem was a major concern of the synthetic fiber industry of the time.

In this way, the import substitution period ended in the early 1960s for natural textile products and the industry entered a stage of export promotion, but the industry continued to rely on imports of raw cotton and had begun importing manmade fiber as well. Further, 1962, the year when the mass exports began in the development of Korea's textile industry, was the year of the start of the first five-year plan for economic development. The plan set several key goals and among these was the improvement of the international balance of payments through an increase in exports. This aimed, specifically, at the promotion of the introduction of foreign capital and the realization of growth while avoiding deficits in the international balance of payments accompanying increased imports of raw materials and became the basis for the subsequent export led economic growth. The textile industry was a main focus of development efforts in the first five year plan along with electric power, fertilizers, and cement.

The first time synthetic fiber appeared in Korea was in 1953 with the weaving of Japanese nylon yarn, but in the 1960s the industry came under attention as for import substitution and production facilities were augmented. By 1968, Korea was able to produce the main synthetic fibers domestically.

Despite the textile industry changing so rapidly in nature during this period, no clear measures were taken for the promotion of that industry in particular. Rather, positive assistance was provided by the policy authorities to the export industries as a whole.

One of the measures was the preferential treatment in export financing. This provided funding for promotion of industries specialized in exports and funding for facilities for conversion to export as funds for capital investment and further established short term funding in the form of export financing, funding for promotion of export industries, funding for foreign currency supplies, a fund for export promotion, and other financial assistance. Further, increased exports were promoted from the tax standpoint as well. Specifically, export industries enjoyed total exemption of sales taxes, 50 percent reductions of income taxes and corporate taxes, and deductions of all commodity taxes. Tariffs for imports of raw materials use for export goods were also totally waived.

On the other hand, Korea was aggressive in introducing foreign capital. In November 1962, the Foreign Capital Introduction Promotion Committee approved the introduction of foreign capital for spinning and weaving machines and processing machinery for mixed spun chemical fibers and the construction of factories. After that the introduction of foreign capital rose rapidly. The biggest industry among the manufacturing industries was the spinning and weaving industry, followed by the chemical fiber industry.

Looking at the industrial policies in the mass export stage, there were also no particularly specialized policies taken. In May 1971, however, the Ministry of Commerce and Industry came out with measures for promotion of the sewing machine industry, but this aimed at complete domestic production. The Ministry of Commerce and Industry began providing subsidies for development of machine prototypes for 17 products, including automatic looms, in 1977. Also, in February 1978, the Ministry of Commerce and Industry selected three industries: dyeing, sewing, and sales, and provided funding support for introduction of advanced technology there, with the aim of achieving high class quality sewn goods.

Externally, in May 1978, the government came out with plans for comprehensive support of the textile industry with the aim of raising exports of textiles to 30 percent of all exports in 1980. That is, it promoted licensing and provided support for the expansion of chemical fiber facilities. After this, in November, it set targets for increased exports for the following year and announced plans for promotion of higher class products and development of new products. These were consolidated in the basic plan for modernization of the textile industry established in May of 1980.

## **4-2. Electronics Industry**

### **4-2-1. Policies for Promotion of Japanese Electronics Industry**

The main measures for promotion of Japan's postwar electronics industry were the 1957 Law on Temporary Measures for the Promotion of the Electronics Industry (Electronics Law) and the Law on Temporary Measures for the Promotion of Special Electronic Industries and Special Machinery Industries (Electronics and Machinery Law), the series of measures for the promotion of the electronic computer industry, and the joint research association for technical development.

#### **(1) Electronics Law and Machinery Law**

The heavy machinery and chemical industries led postwar Japan's high growth. The machinery industries, without question, are the leaders in the Japanese economy even today. In the high growth period, the Electronics Law and also the Machinery Law, discussed here, were of great importance in the measures taken for the promotion of Japan's machinery industries.

The foundation of industrialization may without exaggeration be said to be the development of the machinery industries. The Machinery Law established in 1956 and the Electronics Law established in 1957 both were aimed at the promotion of renovation of ageing facilities and promotion of capital and technical accumulation and the modernization of the machinery industries as a whole. While they had common goals, they were somewhat different in nature.

The Machinery Law enacted in June 1956 included provisions for [1] the formulation of individual basic plans and implementation plans for rationalization of special machinery industries designated by the Minister of International Trade and Industry, [2] support in the same using fiscal funds, and [3] the empowering of the Minister of International Trade and Industry to order joint action to achieve the goal of rationalization when necessary - thus including exceptions to the Antimonopoly Law. The industries designated were machine tools and other basic machinery considered to be mostly produced by specialized small and medium sized manufacturers, common parts such as gears and screws, and products considered to greatly contribute to the promotion of exports such as auto parts and sewing machine parts.



One year later in June 1957 the Electronics Law was established. This law was the same as the Machinery Law in providing for the formulation of basic plans and implementation plans, the investment of fiscal funds, and orders for joint action, but differed from it on the following three points:

[1] The Machinery Law covered machinery and parts, but the Electronics Law included materials as well.

[2] The policies covered machinery requiring promotion of experimental research on manufacturing technology (type 1 machinery), machinery requiring promotion of industrialization (type 2 machinery), and machinery for which industrial production had already begun but which required rationalization of production (type 3 machinery). The financing using fiscal funds under the Electronics Law was only for type 3 machinery. Type 1 machinery, on the other hand, was covered by the subsidies for experimental research expenses for mining and industrial technology.

[3] The Machinery Law set a five-year time limit on promotion of all machinery and made fiscal 1960 its target year, while the Electronics Law decided on the duration of its measures for each industrial sector in consideration of the speed of technical progress in the electronics industry. Many of the industrial sectors were considered requiring short term promotion of two to three years, but there were also industries requiring long term development and therefore the duration of the law was set at seven years.

Further, the Electronics Law differed from the Machinery Law in that it extended coverage in its promotion measures to large companies as well from the viewpoint of the stress on technology. The industrial sectors covered were advanced technological fields which would have large ripple effects. The industries covered also changed with time. At the beginning, the main industrial sectors covered were consumer electronic components, but with the extension of duration of the law in June 1964 (extended seven years until March 1971), the emphasis shifted gradually to industrial electronic components such as integrated circuits and semiconductor devices.

## (2) Electronics and Machinery Law

In April 1974, the Law on Temporary Measures for the Promotion of Special Electronic Industries and Special Machinery Industries (Electronics and Machinery Law)

was established with a duration of seven years in response to a proposal by the Industrial Structure Council. This was meant to combine the promotion measures for the machinery and electronics industries, which previously had been divided between the Electronics Law and the Machinery Law, due to the rising interdependence of the two industries. The law was the same as the previous ones in the use of aid based on fiscal funding, but set as policy goals the raising of the level of technology and the improvement of reliability in the electronics industries. The law newly included in the coverage of electronics industries such sectors as facsimiles, laser equipment, semiconductor materials, electronic measuring equipment, electronic medical equipment, electronic computers, etc.

It is difficult to evaluate the promotion of industries achieved by the financing under the Electronics Law and the Machinery Law. The direct effects were small, it is true, but one does not evaluate policies by just their direct effects. The important thing is that the fiscal funding was provided to frontline technology and stressed industries with large ripple effects. In other words, there may be considered to have been a large effect in announcing industries with large technical potential to the private sector. This reduced the risk of private companies in investing in industries with high potential of technical development and had a synergistic effect.

#### **4-2-2. Policies for Promotion of Korean Electronics Industry**

##### **(1) System of Promotion of Electronics Industry**

The government played a large role in the development of the Korean electronics industry. In Korea's case, like in Japan's, the electronics industry was treated as part of the machinery industry up until the enactment of the Electronics Industry Promotion Law in 1969. Since 1969, based on this law, the government has been giving various types of support to the electronics industry. Complementing the Electronics Industry Promotion Law are the National Investment Fund Law, the Basic Law for Tax Abatement, and Special Law Regarding the Return of Tariffs Etc. for Raw Materials Used for Exports, and the Law for Promotion of Affiliation of Small and Medium Sized Enterprises.

The Electronic Industry Promotion Law included provisions for the formulation of basic plans for the electronics industry, the formulation of implementation plans for the same, the creation of a fund for promotion of the electronics industry, policies regarding technical development and technical training, the creation and operation of an Electronics Industry Council, and the registration of business establishments in the electronics industry. The law covers just those electronic equipment, components, and materials which the government has designated as key sectors for promotion of development.

The products designated as key sectors for promotion included, from 1969 to 1974, 51 products requiring promotion of manufacturing technology and 65 products requiring promotion of specialization, affiliation, and mass production. In 1974, the number of products requiring promotion of manufacturing technology was increased to 93 and that of those requiring specialization, affiliation, and mass production was increased to 102. After this, changes were made in the classification of designation. In the fourth five-year plan, 57 products were designated as strategic development products. The main products designated up until then had been, in consumer equipment, radios, black and white television sets, tape recorders, color television sets, VCRs, electronic watches, microwave ovens, etc. and, in industrial equipment, minicomputers, computer peripherals, electronic telephone exchange equipment, lasers, electronic measuring equipment, etc. In electronic components and materials, memory elements, connectors, etc. were designated.

Several basic plans were announced under the Electronics Industry Promotion Law. The first was the "Eight-Year Plan for the Electronics Industry (1969 to 1976). Subsequent to this, the second plan (1974 to 1981) was announced and in 1976 the third

plan was announced. Along with the passage of time, there has been a change in the targets of the plan from promotion of development, achievement of export targets, and improvement of the rate of self-sufficiency to the promotion of technological-intensification etc. In the "Long-Term Plan for Advancement of the Electronics Industry" announced in 1983, the government set a target for the average annual growth rate of production in the electronics industry from 1982 to 1986 of 22 percent and an average annual growth rate from 1987 to 1991 of 17 percent. It further targeted for an average annual increase in exports of 19 percent in the period from 1982 to 1991 and considered that if that export target were achieved, the share of Korean products in the world market would rise from the 2.3 percent of 1982 to 4.2 percent in 1991. Further, it considered that the structure of the electronics industry would shift from an emphasis on the consumer sector to an emphasis on the industrial sector and that the share of industrial electronics would rise from the 14 percent of 1982 to 31 percent in 1991.

## (2) Import Restrictions

In the case of a fledging industry such as electronics, the most frequently used promotion measure is restriction of imports. A look at the CCCN8 class shows there are 495 electronic and electrical equipment industry products listed. Korea has made rapid progress in the liberalization of electronic and electrical products, but as of 1983 still restricted imports of over 200 products, for a low rate of liberalization of 58.7 percent. In 1984, it reduced the number of products subject to import restrictions to 185, for a liberalization rate of 83.6 percent. In 1987 and 1988, it proceeded faster in liberalization and in February 1988 achieved complete liberalization of electronic and electrical equipment.

The government also plans to gradually reduce tariff rates. The general tariff on electronic products was 30 percent as of 1988, but the government planned to lower this to 20 percent in 1989, 16 percent in 1990, 13 percent in 1991, and 10 percent in 1992 and further to 8 percent in 1993. The reduction of the tariff by 22 percentage points in five years assumes the steady rise of the international competitiveness of Korean industry.

## (3) Preferential Tax Measures and Financial Support

Korea has a system under which income taxes and corporate taxes are waived for the electronics industry for a certain time from the start of production. In addition to this, there is a system allowing R&D expenditures to be deducted as expenses.

In terms of financial support, the government has established a policy of designating a certain percentage of bank funds for investment in R&D. Further, it has established an electronics industry fund for promotion of its "Long-Term Plan for Advancement of the Electronics Industry" and has been supplying funds for R&D and new product development programs using the same.

### **4-2-3. Policies for Promotion of Taiwan's Electronics Industry**

#### **(1) Import Substitution Industrialization Period (1950s)**

Taiwan began import substitution type industrialization, that is, the start of production for domestic demand through the protection of the domestic market, first through such measures as the control of trade and foreign exchange. It instituted import quotas and high tariff measures so as to suppress imports, allocations of foreign currency for management of foreign exchange, and a system of linkage between imports and exports. Further, it adopted a double tiered exchange system advantageous to the trade of the public sector and restrictions on the establishment of factories so as to prevent excess investment and to protect existing companies.

Along with implementation of these policies, Taiwan expanded production of cables and lighting equipment aimed mostly at domestic demand in the field of electrical machinery and raised the rate of production in all manufacturing industries from the 1.2 percent of 1952 to 2.1 percent in 1960. These policies had almost no effect on the electronics industry, however.

Import substitution industrialization reduced the imports of final goods such as consumer goods, as mentioned earlier, but increased imports of the materials and parts required for that production and further the capital goods used for factory construction. This cancelled out any change in imports and resulted in the ratio of imports in the GDP (import dependence) of Taiwan from 14.2 percent to 18.9 percent. This is a phenomenon seen in common in the process of industrialization of developing countries and was due to an increase in imports of intermediate goods and capital goods along with the industrialization.

#### **(2) Period of Export Oriented Industrialization (1960 to 1970s)**

The conversion to export oriented industrialization signifies the change from protectionist policies to liberalization policies based on the principle of competition. Therefore, the policy system of the 1950s was tremendously changed. Foreign capital began to be introduced in the 1950s for making up for the shortages in fund and technical expertise of domestic companies. From 1952 to 1960, however, there were only 86 cases of introduction of foreign capital worth US\$35.65 million.

Only this figure was achieved because, naturally, the series of foreign investment laws were unrealistic and there were strong remnants of the protection of domestic companies. Therefore, in 1959, Taiwan amended the Foreign Investment Articles and in 1960 amended the Overseas Chinese Investment Articles. The main amendments made were to ease the restrictions in investment fields, guarantee the remittances of principle and interest in investments, guarantee the remittances of profits, establish exclusions to application of the domestic laws to investment projects, and grant preferential treatment to domestic nationals and included considerable measures recognizing the free corporate activities of the capital of foreign private citizens. Further, Taiwan promulgated the Investment Promotion Articles in 1960 for application to domestic and foreign investment including private investment from other countries, under which it extended incentives such as exemption of income taxes and permission for the unrestricted remittance home of profits. Further, in 1962, it established the Technical Joint Venture Articles under which it recognized remittances of technical license fees accompanying joint ventures and reinvestment in the same and further promoted the introduction of technology from abroad. The legal framework for expansion of incorporation of foreign capital in the 1960s was completed by the enactment of Articles for Establishment and Operation of Export Processing Zones in 1965.

Most of the electronic products started to be produced in the 1960s were produced by 100 percent foreign equity companies or joint ventures established along with the increase in the inflow of foreign capital. A particularly symbolic product was black and white television sets, the number one item produced in 1970. In 1962, the Japanese firms of Matsushita, Mitsubishi, and NEC invested in Taiwan and in 1963 began production. There were also active introductions of technology in the 1960s, primarily for electronic equipment.

Of course, not all of the electronics industry of Taiwan was accounted for by private foreign companies. Along with the expansion of production activities by foreign capital, there grew domestic companies supplying parts to those foreign capital affiliated firms and domestic companies producing final goods using parts supplied by foreign capital companies and imports. That is, the policies for promotion of the introduction of foreign capital and technology contributed to the promotion of domestic companies as well, coupled with the establishment of the Investment Promotion Articles.

Production by companies established by domestic and foreign capital grew rapidly and the rate of production in all manufacturing industries rose from the 2.1 percent of

1960 to 11 percent in 1970. The industry reached the third highest share of production after food and chemicals.

The production structure in the electronics industry of the 1960s was centered on transistor radios and black and white television sets, with televisions and radios accounting for about 80 percent of the total production of the electronics industry. Black and white televisions began to be produced through capital and technical tieups with Japanese and local capital mentioned earlier. Transistor radios began to be produced in place of the old vacuum tube types through investment by General Instrument Corp. of the U.S. in 1964.

The rapid growth of the electronics industry speeded up even further in the 1970s. One of the greatest factors causing this high growth was the steadily increasing introduction of foreign capital. Along with this introduction of foreign capital, there was much greater introduction of technology.

Policy-wise, Taiwan amended its Investment Promotion Articles in 1970 and established measures giving priority to industries requiring advanced technology and massive capital. Further, the government completed export processing zones in 1970 in Taichung and Nanshin in addition to the one in Kaohsiung of the 1960s and these contributed to the introduction of foreign capital. In particular, it is considered that the existence of export processing zones considerably influenced the inflow of capital in the electronics industry.

The Investment Promotion Articles were again amended in 1977 under which incentives were expanded, such as by raising the amount of yearly remittances of the principle of investment from 15 percent to 20 percent and under which the aim was the promotion of introduction of foreign capital in the electrical machiner, general machinery, and other machinery industries. Further, Taiwan particularly stressed the electronics industry and, as a measure for the promotion and uplifting of this field, established the Electronics Industry Institute in the Industrial Technology Institute in 1974. In 1977, it completed a model IC factory and established plans for spreading and uplifting electronics technology through the institute.

The influx of capital in the electrical and electronic equipment industries accompanying these policy measures resulted in the birth of 2716 new companies from 1971 to 1980 (11.6 times the number of cases of introduction of foreign capital), of



which 1185 were in the electronics industry, 708 for electronic components, 307 for electronic products, and 97 in communications. Along with the increase in the number of companies, production of electrical and electronic equipment grew to take top place among the manufacturing industries in terms of the added value production since 1973. Further, the production structure of the electronics industry came to center on color televisions, tape recorders, and calculators. Since 1979, production of electronic components has exceeded production of consumer equipment.

### (3) Policies of 1980s

In the 1970s, Taiwan worked to raise the level of the electronics industry by establishing the Electronics Industry Institute and amending the Investment Promotion Law so as to promote domestic and overseas investment in fields of a high technical intensity. In the 1980s, Taiwan adopted measures for even more positive improvement of the level of the industry and technical innovation.

In 1980, Taiwan began the construction of the Hsinchu Science Industrial Park with the stated goal of the "introduction of advanced technology industries, science, technology, and manpower to encourage research and development in industrial technology and promote the development of the advanced technological industries. It aimed at the introduction into the industrial part of domestic and foreign capital, in particular capital for advanced electronic industries such as computers and peripherals and integrated circuits. The part was completed at the end of 1980 and in response private sector electronic manufacturers and financial institutions joined for the establishment of the Lianhua Electronics Company, which produced over 10 types of integrated circuits starting in 1981. Investment has been growing steadily.

Similarly, as a means for attracting foreign investment for raising the level of industry, improvements in the industrial structure were promoted by the designation of "strategic industries" and "automation of production" starting in the four-year plan for economic construction implemented from 1982 to 1985. The strategic industries included electrical and electronic products, electronic components, electronic materials, general machinery, and auto parts. Support was given to the strategic industries in the form of guidance in product design, production technology, improvement of quality, automation, energy saving, business management, training of personnel in computer software, etc. and in the form of financing and capital participation.

More specifically, financing was provided from the Bank of Communications in the form of five to seven year long term funds at an interest rate 2 percent lower than that of commercial banks. Further, a total of US\$600 million in export loans (short term financing) and medium and long term (seven year) financing from the Export-Import Bank were provided. In addition, the ceiling on internal holdings was doubled, import tariffs on machinery not yet produced domestically were halved, and deductions allowed in investment taxes regarding the purchase of domestically produced machinery. Regarding capital participation, when a manufacturer's initial capital was insufficient or when it required additional investment, it could apply to the Bank of Communications and obtained from that bank investment up to 25 percent of the paid-in capital (however, the bank would not participate in management itself). Further, the Small Business Bank provided low interest long term funds for the installation of computers and development of computer related products by small and medium sized businesses.

Production automation had as its aims the improvement of productivity and strengthening of competitiveness in the electronics, general machinery, spinning, and plastic processing sectors. Taiwan was being hard pressed by the ASEAN countries along with the soaring wages in the highly labor-intensive sectors, and at the same time the advanced nations were moving ahead with automation of their production facilities in the high tech sectors, so Taiwan was forced to try to catch up with the advanced countries by raising the level of its own production technology. Therefore, it gave priority to investment for automation of production so as to promote greater sophistication in designated industries.

As measures for the promotion of just the electronics industry, there was the "1980 to 1989 Electronics Industry Development Plan" which aimed at improvement of the structure of the industry in the face of the intensifying competition with the advanced nations and the NIEs. Specifically, this provided, as tax reduction measures, five years of exemption of the business income tax in the case of new investments (four years in the case of additional investment) and accelerated depreciation for fixed assets. As investment deductions, it added the investment deduction system in 1982 enabling manufacturers to deduct 10 to 15 percent of their machinery and equipment invested in a year from the business tax (15 percent for domestic machinery and 10 percent for imported machinery). Further, it allowed deduction of research and development expenditures in production areas from the assessed income of that year and made available an accelerated depreciation system for research and experimental equipment with lifetimes of over two years.

In this way, the government came out up front in its industrial policies of the 1980s so as to raise the level of the electronics industry. This reflected the fact that despite the large impact the development of new technology and new products would have on the future of Taiwan's electronics industry, the private sector did not have sufficient capabilities in those areas. This approach of the government was most apparent in measures taken for guidance in the video industry from 1982. These measures were applied together with the measures for promotion of strategic industries and the central satellite factory system and were aimed at the promotion of production and development of not only final products, but parts as well and the development of technology for the same through cooperation among the government, small and medium sized enterprises, and large companies.

The industrial policies taken by the government unquestionably spurred on the development of the electronics industry. Compared with 1960 to 1970, there was a gradual increase in industrial policies aimed at specific industries in the 1980s. In particular, emphasis was placed on industrial policies covering electrical machinery, general machinery, transport machinery, and other machinery industries. These industries, it is considered, will become leading sectors in the Taiwan economy in the future. The sectorial measures were taken by the government undoubtedly because it considered measures targeted at individual industries were necessary for development, unlike in the past.

### **4-3. Automobile Industry**

#### **4-3-1. Korean Automobile Industry and Industrial Policies**

##### **(1) KD Assembly Stage (1962 to 1966: Period of Start of Production)**

The first law established in Korea concerning automobile factories was the "Automobile Industry Protection Law" enacted in May 1962. This led to the start of promotion of the domestic automobile industry under the protection of the government. The main gist of the law was the [1] restriction of imports of foreign automobiles and parts and [2] the authorization of imports of the materials and parts required for automobile production until domestic production became possible. This in turn led to a ban on imports of finished cars and restrictions even on assembly production of used cars.

To promote systemization of the automobile industry to prevent disorderly establishment of automobile manufacturers and the domestic production of parts, the government formulated its "Comprehensive Plan for the Promotion of the Automobile Industry" in August 1964. The Korean automobile industry had almost no accumulated technical expertise and therefore began production through technical tieups with companies of the advanced nations in this period. In this period, it secured the technology necessary for assembly production (simple equipment type technology) by SKD arrangements.

##### **(2) Initial Stage of Domestic Production (1967 to 1971)**

In the second economic development plan, the government changed over to a policy of export oriented industrialization. This period corresponded to the initial stage of domestic production in the automobile industry where joint ventures and technical tieups with foreign companies were being used to establish large sized assembly production systems by the CKD system. To promote domestic production and the parts industries, the government enacted the "Machinery Industry Promotion Law" in March 1967 and further formulated a "Basic Plan for Domestic Production in the Automobile Industry" in December 1969. During this period, four companies were producing finished cars and competition was induced in the Korean automobile industry for the first time, spurring on development of the industry.

### (3) Stage of Development of Domestic Cars (1972 to 1976)

In the third economic development plan, the government laid emphasis on promotion of the heavy machinery and chemical industries. The export promotion program of Korea went into full-scale operation around 1960 and while it first centered on textiles, sundry goods, and other light industrial products, at this time period the key export products shifted to products of the heavy machinery and chemical industries. The automobile industry was selected as one of the strategic industries and was given various preferential treatment together with such key export industries as ferrous metals, shipbuilding, and electronics. For example, these incentives included [1] exemption from tariffs on machinery, equipment, materials, and parts imported for export production, [2] preferential rates for electric power, railroad freight, etc., and [3] preferential treatment in fund procurement.

In 1973, the government formulated its "Long Term Plan for Promotion of the Automobile Industry" for development of domestic cars and for strengthening the international competitiveness of the parts industries. The plan called for "realization of 95 percent domestic production by the year 1975, [2] formation of horizontal affiliations in the parts industries, and [3] realization of 75,000 exported cars by the year 1981 and strove to develop domestic cars unique to Korea and the separate growth of the parts industries.

### (4) Preparatory Stage of Mass Production System (1977 to 1981)

In the period of the fourth economic development plan, the automobile industry was considered one of the strategic export industries and efforts were made to strengthen the international competitiveness of the industry as a whole, including finished car manufacturers and parts manufacturers, and to rationalize the industry in various manners. Establishment of affiliations by parts manufacturers was promoted after the promulgation of the "Small and Medium Size Enterprise Affiliation Promotion Law" of 1975 and it was decided to give priority in the promotion of about 50 of their products. Further, in July 1978, 138 factories and 47 key products were designated for promotion of specialization and affiliation in the automobile industry. As a result of the strong efforts made by the government to promote affiliations in the industry, the number of products designated for affiliation rose to 135 in 1981, and 14 parent companies and 353 affiliated parts manufacturers were born.

Just before the second oil crisis, the government took measures to promote expansion of the industry in view of the recovery of business from the effects of the first oil crisis. The automobile industry was selected as one of the 10 largest strategic export industries in January 1979 and received financial and tax support for its promotion. Further, the establishment of a mass production system was encouraged. Therefore, all the manufacturers tremendously increased their investments and boosted their production capabilities from the 220,000 cars a year of 1978 to 280,000 cars in 1979, and 370,000 cars in 1980 (including 240,000 passenger cars and 130,000 commercial vehicles).

The manufacturers worked in accordance with the government's domestic production plans and as a result the rate of domestic production rose, reaching over 90 percent in the passenger car sector in 1981 and 70 to 80 percent in the truck and bus sector. Further, the manufacturers worked during this period to increase their competitiveness, improve their management, and develop new technologies and products and established the foundations for a mass production system.

(6) Stage of Establishment of Foundation for Exports (1982 to 1986)

At this period, the emphasis in the government's promotion of the automobile industry was on strengthening the international competitiveness of the industry as a strategic export industry. Therefore, the government eliminated in 1987 the "Measures for Rationalization of the Automobile Industry" announced in 1981 as means for dealing with the recession and tried to guide the domestic automobile industry to a more competitive system. The companies managed to recover from their management difficulties during this period through rationalization of management and improvement of productivity and built positions for themselves as export companies.

(7) Stage of Shift to Liberalized System (1987 to 1991)

From this period on, three new circumstances may be said to face the Korean automobile industry: [1] the shift of the automobile industry from government protection and control as a key industry for promotion to a liberalized system, [2] surfacing confrontation between labor and management over the distribution of the fruits of the economic growth achieved, and [3] the increasing motorization due to the improvement of the national income and to the easing of various controls, improvement of services due to the competition between manufacturers, and the construction of a road network in preparation for the Seoul Olympics and thus the start of the growth of a full scale

domestic market.

#### **4-3-2. Taiwan's Policies Toward the Automobile Industry**

##### **(1) Changeover in Industrial Policies**

Taiwan changed its industrialization policy starting from 1960 from one of import substitution to one of export orientation and strove to maintain free competition and attract foreign investment rather than protect the domestic market. In the process, it brought about the development of the electronics industry etc. The automobile industry, however, continued to be protected even after 1960, with the government aiming at domestic production of everything from passenger cars to large sized trucks.

One of the measures taken for protecting the domestic market was import tariffs. The tariff rate on passenger cars, buses, and trucks was in principle 65 percent and in addition to this there was a 4 percent tax assessed as "commercial port construction expenses". A commodity tax was further collected upon customs clearance on the price of the automobiles, calculated as the price of the automobiles upon customs clearance + tariffs + commercial port construction expenses and in addition there was a 5 percent sales tax assessed on the total of all of this, so the price of imported cars rose 2.2 fold after customs clearance. When the sales costs etc. were added on, the price rose even further. In addition, some restrictions was placed on the imports of automobiles. Depending on the period, imports were banned or else opened up and this pattern was repeated several times.

On the other hand, Taiwan established provisions for a local content rate (rate of use of domestic parts and materials) and after July 1978 required that the local content be 70 percent for both passenger and commercial vehicles (up to December 1987). Further, it selected several of 15 designated parts every year and made procurement in Taiwan obligatory. This provision served as a protectionist measure for the parts industries.

The government also took a careful approach in the capital participation of foreign companies and direct investment so as to protect and promote domestic companies. In the 1960s to 1970s, almost all ties between foreign companies and Taiwanese companies were technical tieups as the general position of the government was that payment of royalties to foreign companies did not constitute direct participation in management. The approach of the government was therefore different from that in other industries where it

opened the door wide to foreign capital and tried to aggressively attract the same.

The automobile industry increased its production thanks to the above protection and promotion, but even in 1980 it was far from producing a level of 500,000 cars, considered by UNIDO to be the efficient scale of production, or 200,000 units of single models, said to be the optimal scale of production of mass market cars. Further, its scales of production were about to be surpassed by Korea, which had reached the export level. Therefore, the Taiwan government was being forced to begin shifting its policies toward a domestic market orientation.

In 1979, the government promulgated its "Plan for the Development of the Automobile Industry" with the aim of achieving production of family cars primarily for export through joint ventures with foreign companies. The law mainly called for [1] the establishment of automobile companies producing 200,000 cars a year through introduction of foreign investment and technical tieups, [2] the establishment of manufacturing plants for large sized vehicles, [3] the positive promotion of the parts industries, and [4] the promotion of technical development in the automobile industry and the training of technicians for the same. In 1980, the government announced four principles for introduction of foreign capital: an international level of quality, a level of production enabling the merits of scale, transfer of technology, and mutual benefit in investment.

An automobile manufacturer of an advanced country announced it would participate in a joint venture automobile project, but later the various parties failed to reach agreement and in 1984 the project was suspended. This was because Taiwan continued to maintain strict protection of the automobile market and companies.

After this failure, the government promulgated a "Second Automobile Industry Development Plan" in April 1985 including new provisions based on the principle of liberalization of the industry. It mainly called for reduction of the degree of protection of the domestic industry to strengthen free competition, encouragement of exports through the introduction of foreign technology, encouragement of research and development to promote entrenchment of technology, and establishment of an inspection system to improve inspection standards. The main measures included:

- [1] Reduction of the tariff protection each year to improve corporate management and reduce production costs



- [2] Promotion of investment by foreign automobile companies and parts companies in Taiwan, welcoming of technical transfers, and introduction of advanced technology
- [3] Adjustment of the local content rate to rational levels for promotion of the sound development of the automobile industry
- [4] Periodic study of restrictions on import areas to promote rational competition
- [5] Promotion of exports of automobiles and parts for participation in an international division of labor
- [6] Encouragement of research and development and human resource development so as to improve design and development capabilities

In this way, the plan did not liberalize the industry as much as in the electronics industry etc., but did include measures considerably changing the protectionist policies of the past. Further, with the promulgation of the plan, joint ventures were realized with Nissan, Toyota, Mitsubishi, Fuji Heavy Industries, and other firms, resulting in the start or expansion of production in 1988. Further, import tariffs were reduced and the commodity tax law was amended. In 1986, further, the government announced that export plans would no longer be a requirement for examination of applications for investment.

This change in Taiwan's policies was very similar to the change in policies made by Korea in the early 1980s. The domestic car Pony, for which Korea managed to increase exports of, received a bad reputation for performance and quality at the time of the second oil crisis, but the problems were solved through assistance from foreign companies. That is, Korea allowed capital participation, not only technical tieups, so as to strengthen the technical support from foreign companies. Korea sought to ensure the survival of its automobile industry through the positive participation in the international strategies of the advanced countries.

## **Chapter 5. Current State of Thai Industrial Development**

### **5-1. Material Supply Industries**

#### **[1]. Textile Industry**

The textile sector previously grew as an import substitution type industry, but along with the rapid growth of the export garment industry, it has taken on another role of expanding and strengthening the supply of materials to the garment industry. At the present time, however, the backwardness of the spinning, weaving, and other facilities and production technology, the insufficient capacity in the dyeing and other midstream sectors, the lack of a converter function, etc. make it impossible for the industry to do a sufficient job in supplying materials.

In particular, to eliminate the insufficient capacity of the midstream sectors such as dyeing and printing, it is considered important for the public sector to provide support for water supply facilities and waste water treatment, all of which are essential for this industry. Further, in raising the technical level of small and medium sized enterprises in the fields of dyeing, printing, finishing, etc., it will be necessary to strengthen the leadership abilities of the TID (Textile Industry Division).

### **5-2. Supporting Industries**

#### **[1] Mold and Die Industry**

The auto part, home electrical appliance, plastic, toy, and other export industries are growing rapidly and demand for molds and dies is soaring as well. With the exception of the in-house divisions of the leading companies, which include the foreign capital affiliated companies, the mold and die industry is made up of small and medium sized enterprises which still cannot cope with the demand due to their levels of technical expertise, resulting in many users relying on imports.

To deal with the increase in demand for molds and dies, it is important to strive to raise the level of the numerous small and medium sized mold and die makers. For this, it would be desirable to make positive use of the functions of MIDI (Metal-Working and Machinery Industries Development Institute). In this regard, it will be important to help promote industrial organizations and smooth the relations between MIDI and the private companies and to help make more effective use of the activities of MIDI.

[2] Plastic Processing Industry (Industrial Parts)

Along with the increased demand for industrial parts for electrical and electronic equipment and automobiles, some of the plastic processing manufacturers which previously produced household goods and daily sundry items have been diversifying to the production of industrial parts. The production technology for industrial plastic parts, where a high degree of precision is required, is insufficient in all areas, including knowledge regarding materials, mold and die making technology, plastic molding technology, etc. There is considerable room for improvement. Also, there are extremely few processing manufacturers able to supply users with the amount of industrial parts demanded in the qualities required.

To increase the supply of industrial parts, it is necessary to raise the level of knowledge and technology of the many small and medium sized plastic processing manufacturers. It would be effective for the Ministry of Industry to establish technical training functions in this area. To enable the government to play a full role in this regard, it would be important to establish a policy unit for plastic processing in the Ministry of Industry.

### **5-3. Export Industries**

#### **[1] Toy Industry**

The toy industry is growing rapidly as an export industry, but almost all of the production and exports are by large sized companies (including foreign affiliated companies) engaged in OEM production on order from foreign companies. The problem is that these companies do not have product development capabilities or their own sales channels and further that most of the other small and medium sized companies produce toys of low quality and safety.

To establish the toy industry as an export industry, it is necessary in particular to guarantee the quality and safety of the toys and to eliminate copies and substandard products. The establishment of an organization for inspecting the quality and safety of toys would be desirable. Further, it will be necessary to establish a section in charge of the toy industry in the Ministry of Industry.

#### **[2] Garment Industry**

The garment industry is rapidly increasing its exports, but faces numerous problems such as the limits of the domestic supply of materials, insufficient design and product development capabilities, low quality and added value, and a lack of independent sales capabilities.

To promote the expansion and strengthening of the garment industry, it is necessary to develop human resources such as technicians and skilled workers and also to promote the growth of small and medium sized enterprises and subcontractors. Strong support from the government is hoped for in this regard. Further, government support to, in particular, small and medium sized enterprises, would be effective in the area of export promotion activities, including programs for improvement of designs and brand images.

#### **[3] Wooden Furniture Industry**

The wooden furniture industry is already building a firm position for itself as an export industry, but faces problems such as limited supplies of materials, a large proportion of products of low degrees of processing and added value, and a low level of technical expertise in the small and medium sized enterprises.

In raising the technical level of small and medium sized enterprises and raising the degree of processing of products and their added value, effective support from

government organizations would be desirable. Further, the securing of stable supplies of raw materials is becoming an important issue and here too measures by the government are hoped for.

[4] Plastic Processing Industry (Household Goods)

Reportedly over 2000 companies produce plastic household goods and daily sundries, but export products are made by only a small handful of companies of a medium size or higher. Even these medium sized and larger companies have insufficient processing and design capabilities and further there are very few companies with independent marketing capabilities.

Regarding exports of plastic household goods and daily sundries, support activities by the government in the areas of product development, design, marketing, etc., in particular for small and medium sized enterprises, would be desirable.

[5] Ceramic Industry

The ceramic tableware and novelty industry is moving in the direction of development as an export industry, with even some small and medium sized enterprises in the action. With the exception of the large companies in the Bangkok region, however, the companies lack sufficient knowledge and experience in the supply of materials, processing techniques, design, export marketing, and other arms. Further, in the Lampang province in the North, the necessary checking and grading is not performed in the supply of raw materials. Urgent measures are required to promote effective utilization of resources and improve product qualities.

The ceramic industry, which is centered in Lampang province in the North, can be expected to grow tremendously as an export industry if improvements are made in the area of raw materials and production technology. Toward this end, it would be extremely effective to establish a public service organization in that region offering services such as analysis of materials and training in production technology.

## **Chapter 6. Problems in Industrial Development in Thailand**

### **6-1. Insufficient Conversion to Export Orientation**

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Thailand has been industrializing rapidly and converting from import substitution to export orientation, but a broad range of restrictions and protectionist measures introduced during the period of import substitution type industrialization remain. The residual vested interests often serve to block the free competition and market mechanism needed for export oriented industrialization.

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In promoting "import substitution" type industries, the usual practice on the one hand is to promote and control investment and on the other hand is to control imports through import restrictions, high tariff policies, or exchange controls and thus protect domestic industry. Therefore, the industrial promotion policies of governments at this stage usually ends up stressing "control" and "protection" rather than "promotion".

In switching industrial development over to an export orientation, generally it is necessary to strengthen promotion of investment and ease controls, that is, to "promote and liberalize investment". At the same time, it becomes necessary to ease import controls and high tariff policies or "liberalize trade". This is what enables an industry to operate under "a market mechanism based on free competition" and to build up enough international competitiveness to advance into foreign markets. In other words, it is essential to shift the emphasis in government activities from "controls" and "protection" to "promotion".

In switching an industry from an import substitution type to an export orientation, there are frequently many troubles, difficulties, and sacrifices which have to be made. For example, once restrictions on facilities are abolished, an excess production capacity is formed in the industry and competition between companies intensifies, sometimes even excess competition. If import tariffs on products are lowered, inexpensive imports flow into the market and price competition with domestic products intensifies. The reduction in fiscal revenue due to the reduction of import tariffs etc. also has to be covered by other revenue sources.

The conversion from import substitution to an export orientation means

liberalization in various areas of industrial activity and the use of the market mechanism. This is what makes possible the building up of enough international competitiveness enabling successful entry of the industry into the world markets.

Already formed "import substitution type" industries include vested interests and the conversion to an export orientation and liberalization of such industries can be expected to result in many problems, difficulties, and sacrifices, so industries are often "cowardly" when it comes to conversion and liberalization and tend to want to put off the necessary reforms. However, a look at the history of the industrial and trade policies of Japan, Korea, and Taiwan will show that the pain and sacrifices can be reduced by starting this conversion quickly and boldly and that this has a desirable effect on the development of industries as a whole. Conversely, the later one starts the conversion and liberalization, the greater the subsequent pain and sacrifices.

In Thailand, while export oriented industries have been developing rapidly, there are a wide range of residual restrictions and protective measures previously introduced in the import substitution industrialization stage. For example, there are the high import tariffs assessed on machinery and raw materials and residual restrictions on facilities in several key industries. These have resulted in the creation of vested interests in those industries, which form forces resisting the process of deregulation necessary for the conversion to an export orientation. That is, the Thai industrial world has not yet made a clear decision to convert to an export orientation despite the rapid growth achieved through the development of export industries.

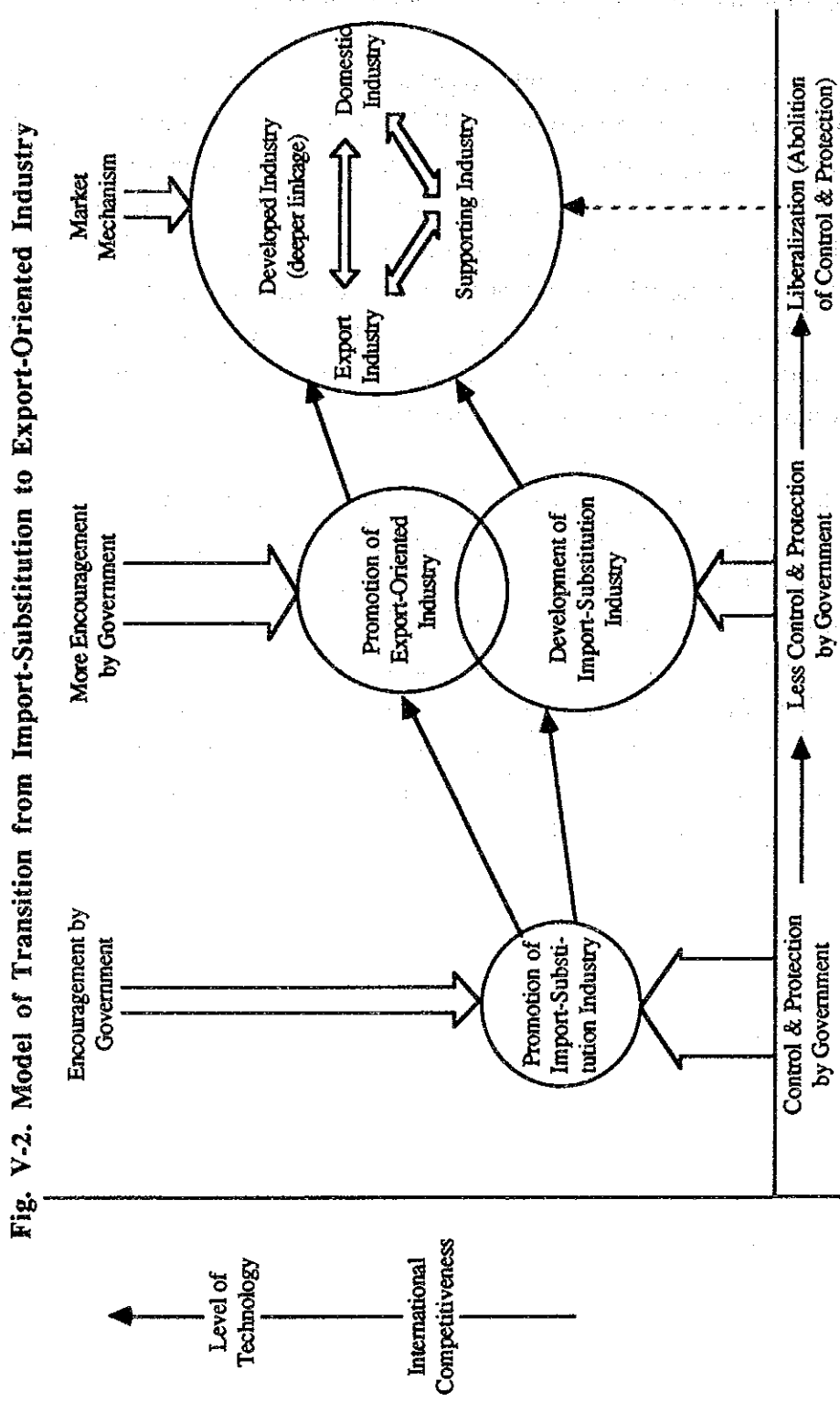


Fig. V-2. Model of Transition from Import-Substitution to Export-Oriented Industry



## 6-2. Limits of BOI Investment Incentives

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In the promotion of export oriented industrial development, the investment incentives of the BOI (Board of Investment) have been tremendously effective, but at the same time have served to widen the gap with the supporting industries and small and medium sized enterprises, which do not enjoy such incentives, and to inhibit the development of a linkage or mutual dependency which should be formed with the same.

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The investment incentives of the BOI have played a great part, particularly in recent years, in the promotion of "export oriented" industrial development. However, one cannot really say that they have been sufficiently effective in converting existing "import substitution type" industries over to an export orientation. In particular, compared with the vast numbers of small businesses, there are not that many examples of existing small and medium sized enterprises or cottage sized enterprises expanding their production capacities and increasing their exports by making use of BOI investment incentives. This is because the BOI investment incentives designate certain industries for promotion, cover new investment projects of companies, and are given after case by case examination. They are not therefore effective in terms of the industrial sector as a whole.

Further, the BOI investment incentives do not function to deepen the linkage and interdependence between new export oriented industries and existing import substitution type industries. Rather, in some cases, the gap between export oriented industries developed with BOI promotion incentives and other industries tends to grow and the linkage and interdependence weaken.

Clear limits have appeared in the conventional approach of promoting industrial development through primarily BOI investment incentives. Just relying on investment incentives, it is considered difficult to achieve a balanced industrial structure or a desirable linkage among industrial sectors.

### 6-3. Lack of Sectorial Approach

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In Thailand, due in part to the unfamiliarity with the idea of sectorial industrial promotion policies, there are no sections or officers in the government given specific charge over the key industrial sectors and, further, industrial organizations which could interface with the same have not been developed. There are many problems because of these situations.

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In a country's industrial development, often a need arises for speeding up the development of a specific industrial sector. For example, there are the cases where it is desirable to promote the development of supporting industries which have lagged behind in development compared with related sectors and cases where it is desirable to promote the development of high tech industries making use of new technology. To make realize this, it is necessary to take up specific industries and sectors for which development is desired and devise policy measures to promote their development - assuming the "liberalization" and "use of the market mechanism" in industry as a whole. This is an important part of a sectorial approach in industrial policy.

In the past, Thailand has encouraged industrial development by making use of the BOI investment incentives. However, in promoting the development of specific industrial sectors, as seen also in the case of Japan, Korea, and Taiwan, it is important and effective to have "sectorial industrial policies" for formulating and pushing forward with comprehensive measures for specific sectors, including modernization of existing industries, strengthening of competitiveness, and promotion of small or cottage sized enterprises.

In this regard, Thailand has still not yet fully realized the importance of formulating and pushing forward sectorial policies and has little experience in the same. This is considered to have lead to the imbalance in the overall industrial structure and the lack of linkage among related sectors.

#### **6-4. Backwardness of Small and Medium Enterprise Policies**

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Thailand has devised various types of measures to promote the development of small and medium sized enterprises and cottage industries, from information services and consulting to financial support schemes. The benefits are not as good, however, as the investment incentives of the BOI, and the measures cannot be said to have been as effective as hoped for due to various limitations.

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Thailand's manufacturing industries are continuing to grow steadily, but there are many small and medium sized enterprises and cottage sized enterprises in them and the gap in technology and management with the large companies is growing. Further, there are quite a few small and medium sized enterprises and cottage businesses which cannot keep up with the development of the export industries even in the supporting industries and subcontracting industries, which are necessary supports for export oriented industries. This situation is creating structural imbalances in the manufacturing industries and is becoming a restrictive factor in the activities of the large companies and foreign capital affiliated firms. In addition, it is inviting a surge of imports of parts and raw materials and will lead to an increase in the trade imbalance.

There are various reasons for the slow development of small and medium enterprises and companies in the support industries (including subcontracting industries), for example:

- The BOI investment incentives, which have been a major driving force behind Thailand's industrial development, are set up in a way making them difficult to be used by this type of enterprise. (BOI approval is given through case by case examinations and there is a strong tendency to give priority to larger sized, more effective projects.)
- The Thai tax system (business tax) is more disadvantageous to small and medium enterprises than large companies and is inconvenient for the supporting industries as well.
- The Thai financial system is also more disadvantageous to small and medium enterprises than large companies in many cases (for example, in general,

interest rates are lower for large companies).

In general, the small and medium enterprises have been slow to modernize management and technology and lack the necessary information and knowhow for this as well.

The ISD (Industrial Service Division), one of the divisions of the DIP, is in charge of government measures for the promotion of small and medium enterprises. On the other hand, there are two public financial institutions engaged in financing for the small and medium enterprises: the Small Industries Finance Office (SIFO) and the Industrial Finance Corporation of Thailand (IFCT). The main purpose of the SIFO is to provide relatively low interest financial assistance to cottage and small sized enterprises in the fields of handicrafts etc. The IFCT is supposed to providing financing for various manufacturing projects useful for the economic development of Thailand, such as the establishment, expansion, and modernization of private companies.

However, these series of small and medium enterprise policies cannot be said to have been effective enough to keep up with the progress in Thailand's industrialization and the rapid growth of the export industries. This is for numerous reasons, such as the smaller advantages available under the small and medium enterprise policies compared with the advantages large companies and foreign capital affiliated firms enjoy through the BOI investment incentives and the failure of the IFCT and SIFO institutional financing to have the hoped for effects, due in part to obtain low interest funds.

Now, however, the stage has been reached in several Thai industrial fields where the small and medium enterprises should play important roles as export industries or as supporting industries. The current state of affairs, where these lag far behind the rapid growth of the export industries, will be major stumbling blocks and obstructions to the further industrialization of Thailand.

## 6-5. Rigidification of Public Services for Promotion of Industry

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Most of the public organizations providing technical guidance, training or supplying information, etc. for promoting industry lack sufficient funding, so cannot replace old equipment so as to keep up with industrial development or improve the level of their services and therefore cannot meet the demands of industry.

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In general, in the initial stages of industrialization, public organizations are established by the government using fiscal funding and provide services for free or at low cost. The services are primarily education and training in technical matters.

In the stage of progress in industrialization, the range of services is expanded to include various services for promotion of industry, such as establishment of specifications or standards, inspection of materials and products, and the collection and dissemination of services. At this stage, in many cases use is made of not only fiscal funding from the government, but also private sector funds collected in the form of membership dues, inspection fees, and usage fees, so as to try to further expand services. The collection of a certain amount of fees from the beneficiaries of public services is a practice adopted in many countries under the "principle of the beneficiaries bearing the costs".

The public service organizations under Thailand's Ministry of Industry still operate almost completely on fiscal funding. Therefore, they do not find it easy to renovate or modernize their equipment, expand the range of their services, or to augment their staff to keep up with the development of industry. As a result, in quite a few cases the public service organizations have become fatally rigidified and no longer can meet the needs of industry with their services.

Even assuming that the public service organizations were to have their users bear some of the costs incurred, in general the payments would be entered as fiscal revenue in the government account and would not be used for the improvement of the functions or services of the public service organizations themselves. Therefore, the public service organizations currently do not bother trying to raise their revenue.

The public services offered in the industrial field must evolve and grow along with

the development of industry and therefore it is often necessary to augment and renovate facilities and to increase staffing. However, the public service organizations under the Thai Ministry of Industry are not in a position where they are able to do this.

#### **6-6. Imbalance in Industrial Structure and Lack of Linkage Among Industrial Sectors**

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Despite the rapid growth of export oriented industries making use of the investment incentives of the BOI, there has been insufficient development on the part of the material supply industries, supporting industries, and small businesses which support the same. Because of these, there is insufficient linkage among related industrial sectors. The imbalance in the industrial structure is becoming a serious problem. Further, industrial development is concentrating in the Bangkok metropolitan area, creating the problem of a widening gap with the local regions.

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In Thailand, the situation often occurs between two industrial fields enjoying close linkage and interdependence where one succeeds in converting to an export orientation, while the other remains at the import substitution stage or still cannot cope with the needs of the export oriented industry. In particular, there are quite a few cases where industries producing consumer goods manage to switch to an export orientation and establish "relative superiority" in the global market, but the industries supplying the materials for the same have not reached a stage where they can deal with this and are still in a position of "relative inferiority".

In this case, the export oriented consumer goods industries must rely on imports for most of the materials so as to maintain their international competitiveness in the global market, since the materials produced domestically fail to meet the necessary conditions of quality, variety, and price. If they were to use the relatively inferior domestic materials, the consumer goods industries themselves would lose their international competitiveness. This results in a lack of the linkage and interdependence which should inherently exist between the consumer goods industries and materials industries.

A country should proceed with industrialization while preserving as much as possible a balance among its various industrial sectors. If this can be done, the linkage and interdependence between the export oriented industries of that country and its related industries would become stronger and vertical production could be realized from the raw

materials to consumer goods, increasing the overall added value, ensuring relative superiority in the global market, and making strengthening of international competitiveness possible. There are, however, many problems with this in today's Thailand and the necessary linkage among industries has not been sufficiently formed yet at the present time.